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Original Lectures.

ARTICLE I.

CHRONIC GENERAL DISEASES, OR CONSTITUTIONAL AFFECTIONS: THEIR CAUSES, PATHOLOGY, AND THE PRINCIPLES THAT SHOULD GUIDE THEIR TREATMENT. A Lecture in the Regular Course on Practical Medicine in the Chicago Medical College. By N. S. DAVIS, M. D., Chicago, Ill.

Gentlemen: Having completed the consideration of the acute general diseases, I now invite your attention to the second division of general diseases called chronic or constitutional affections. Under this head belong scrofula, tuberculosis, leucocythæmia, pernicious anæmia, Addison's disease, carcinoma, constitutional syphilis, rheumatism and gout.

Diverse from each other as some of these diseases may appear to be, they nevertheless have a sufficient number of circumstances in common to justify their being grouped together.

First. They are all characterized by a very persistent, if not permanent, alteration of the natural properties of the tissues,

giving rise to certain morbid tendencies or predispositions to the development of special local affections both of a functional and structural character.

Second. They are all capable of being transmitted from parent to child—in other words, of being perpetuated by hereditary influence.

Third. So far as relates to the general or constitutional morbid condition, there is no tendency to a self-limited duration.

Fourth. They all arise from causes acting with feeble intensity, but persistently, through long periods of time, and of such a nature as to modify one or both of the elementary properties of living, organized matter.

In all these particulars, this group of constitutional diseases stands in direct contrast with the class of acute general diseases which we have already passed in review. You have observed that, in all the latter, the morbid manifestations are of an active character, leading rapidly to functional and structural changes of limited duration, are incapable of hereditary transmission, and arise from causes acting with more intensity, but of limited duration, one full impression of which often destroys the susceptibility to any further action of the same cause. On the contrary, the diseases I am about to discuss are based on such changes in the properties of the primary organic molecules entering into the various structures of the body, as give such molecules certain tendencies to deviate from the natural standard or type of development, leading, if not counteracted by adverse influences, sooner or later, to such alterations in the molecular movements constituting nutrition and disintegration as to develop structural changes, consisting of local hypertrophies, atrophies, tissue degenerations, or morbid growths, according to the degree and direction of the primary deviations.

So slight and occult are the original changes in the properties of the organic atoms or cells that the constitutional vice or defect may exist for years without any appreciable structural changes, as we see in those hereditarily predisposed to pulmonary tuberculosis, carcinoma, etc., and yet if at any time during the life of such individuals, ordinary exciting causes chance to induce local irritation or inflammation, the presence of the latent or constitu-

tional condition is made manifest by the unusual persistence of the local morbid action and the special tendency to degenerative changes in the exudations or other products resulting therefrom. For instance, a child possessing the scrofulous diathesis or constitutional condition, if exposed to a current of cold air upon the neck, may have inflammation, exudation, and tumefaction of the lymphatic glands, ending either in permanent hypertrophy, caseous degeneration, or destructive suppuration; when the same cause provoking a similar degree of inflammation in a strictly healthy child, would have caused but a temporary exudation and swelling, to be followed in a few days by resolution and a return to the natural condition. So an adult with the tuberculous diathesis or constitutional condition, attacked with pneumonia followed by the usual exudation, will be likely to have such exudative material undergo either purulent degeneration, constituting diffuse suppuration, or caseous degeneration and early phthisis, instead of resolution and re-absorption, as usual in subjects previously healthy.

That the primary and essential pathological condition constituting a chronic general disease, constitutional vice, cachexia, or diathesis, as it is variously called by different authors, consists in a morbid condition of one or both of the inherent properties of organized living matter, is proved both by its liability to hereditary transmission, and its persistence indefinitely with a well-known tendency to develop, sooner or later, specific nutritive changes in some of the structures of the body. As the germinal cell or aggregation of bioplasm furnished by the female, and the spermatozoa furnished by the male, are both living organized materials, it is reasonable to suppose that they will partake of the same properties, whether perfect or imperfect, that belong to all the other organized atoms of the bodies in which they were developed; and consequently, in their independent subsequent growth, they will generally develop the same morbid tendencies as were possessed by the parent. The modifications of the properties of the germ may be so strong as to lead to manifest errors of nutrition during the development of the fœtus in utero, or at any time during the period of subsequent growth, or so feeble as not to cause their appearance until after the climax of adult life

in the early stage of physical decline. While the essential pathology of all this class of diseases consists in some modification of the elementary properties that govern the molecular changes constituting nutrition and growth, these modifications not only differ in degree in different cases in the same constitutional affection, but they also differ in kind or direction in each affection from all the others; so that the local manifestations of disease developed from time to time during the progress of any given case, are peculiar to the special constitutional affection to which the case belongs.

For instance, the general morbid condition constituting scrofula, never gives rise to the local, functional or structural changes characteristic of syphilis, carcinoma, or leucocythæmia, and *vice versa*. Neither do you find the rheumatic constitution giving rise to the local inflammations of gout, or the reverse. This affords further proof that the primary or fundamental pathological condition consists in some deviation from the natural condition of the properties inhering in the organized tissue elements, inasmuch as it shows obedience to the universal law of living matter, namely, that like begets like. It is true, that constitutional syphilis may be established in a subject already scrofulous, or by a sufficient exposure to the proper causes and modes of living, gouty affections may be engrafted upon a previously rheumatic diathesis; but this in no proper sense invalidates the law just stated in regard to the fixed tendencies of each constitutional disease. Another fact of much pathological importance is, that the local affections which are liable to appear during the unrestrained progress of any one of the general diseases included in the class under consideration, are not accidental complications, but natural or necessary outgrowths resulting from the progress of the constitutional vice. They may be hastened in their appearance, or rendered more severe by the intervention of special exciting causes, or the influence of bad sanitary conditions. And, on the other hand, their development may be retarded or entirely prevented by the combined influence of good climatic, hygienic, and sanitary regulations.

And yet, in a large majority of cases, it is the local morbid developments that chiefly occupy the attention of the patient,

and on account of which he seeks the aid of his physician. The local developments resulting from the progress of the scrofulous diathesis, appear most frequently in some part of the adenoid or lymphatic glandular system, and next in the cutaneous surface. Those of the tuberculous, which is closely allied to, if not a mere modification of the scrofulous, may be met with in any of the more vascular structures of the body, but are most frequent in the lungs, and next in the mucous membranes and lymphatic glands. In leucocythæmia and pseudo-leucocythæmia, the almost uniform tendency is to develop hypertrophy or increased growth of the lymphatic glands and spleen.

Etiology.—There is no doubt that a large proportion of the cases of the several diseases included in this group have their origin primarily in hereditary influence. This I have endeavored to explain already; but cases are also met with in relation to which no hereditary influence can be traced. These appear to have had their origin from certain causes which had been permitted to act steadily through long periods of time, and yet with so moderate a degree of intensity as to avoid exciting acute general disturbances. One class of these causes produce their deleterious effects by acting primarily on the processes of digestion, assimilation and nutrition; another class exert their influence on the processes of disintegration and elimination of waste material. To the first, belong insufficient or unwholesome food; inadequate supply of light, heat, and pure air, and want of proper exercise. To the latter, belong all those agents and influences that slowly but persistently retard retrograde metamorphosis in the tissues, or interfere with the elimination of the products of such metamorphosis through the proper excretory organs, such as continued exposure to cold and damp air; deficient physical exercise; depressing mental emotions; the habitual use of alcoholic drinks; and the occupation of rooms overcrowded, or inadequately supplied with air and sunlight. Food may be insufficient in quantity, or in the variety of its nutritive constituents, or of such quality as to render it indigestible, and, in either case, the blood will become more and more defective in the proportion of its nutritive elements, and some of the tissues will be correspondingly impoverished.

There are but few persons in this country who suffer from inability to procure a sufficient amount of food. In the feeding and training of children, however, errors of much importance are frequent among all classes. Among the poor we often find large families living on the coarser and cheaper articles of food, with but little variety from week to week, and at the same time occupying damp, uncleanly, and ill-ventilated apartments; and glandular swellings, chronic ophthalmias, caries of the bones, and other local evidences of scrofulous and tubercular tendencies are common among them. Quite as often among the rich and fashionable we find the infants and young children committed to the care of nurses, kept much within the limits of the nursery, and indulged so freely in the use of saccharine matter, consisting of sugar, candies, sweet-meats, and sweet-cakes, at any and all times of the day, that they lose all relish for plain bread, milk, meat, and other nitrogenous food. The result is that they grow delicate, slender, thin in muscles, with narrow chests, unusual mental vivacity, and extreme susceptibility to all kinds of impressions. The anxious mothers always assert that they are so delicate they will take cold every time they are allowed to go out. It is among the children so trained that we find many of the best samples of the scrofulous constitutional condition, accompanied by frequent temporary, and sometimes permanent, enlargement of the lymphatic glands of the neck. And of those belonging to the same class who live beyond childhood and youth, there are many who become tuberculous between the ages of eighteen and thirty years.

Nothing is more certainly proved by abundant observation, than the fact that long continued living on food deficient in some of the elements needed for healthy growth and repair of living structure, is capable of modifying the assimilative processes in such a way as to develop imperfect cells and other tissue elements. And if to the use of food thus deficient, there be added living and sleeping in inadequately ventilated apartments, too little habitual exercise of the muscles of the chest and upper extremities, and clothing either inadequate for protection against sudden and extreme atmospheric changes or so adjusted as to impede the free expansion of the chest, you have a combination of

influences, which, if long continued, are certain to so modify the properties of the blood and organized tissues of the body, as to establish some one of the special diatheses or morbid constitutional conditions, whether it be scrofulous, tuberculous, leucocythæmic, or rheumatic. It is also true, that a morbid constitutional condition thus acquired, if well established, is capable of being transmitted from parent to child, and thus start a new line of hereditary influence.

A somewhat careful study of the etiology of constitutional diseases, has led me to the conclusion that the habits of a people in regard to diet, drinks, dress, occupations, and the construction and cleanliness of houses, have far more to do with the production and propagation of the scrofulous, tuberculous, leucocythæmic, cancerous and gouty diatheses, than the elements and influences included under the head of climate; while the latter exert a controlling influence in the formation of the rheumatic predisposition. While the protracted influence of low temperature and dampness, combined with either impure air or insufficient food, tends strongly to produce the scrofulous and tuberculous affections; a climate characterized by low temperature with a high degree of moisture, and accompanied by frequent thermometric changes, without other bad influences, equally tends to create the rheumatic affections, by habitual interference with the natural exhalations from the cutaneous surface, and the consequent retention of certain acid constituents in excess in the blood. The excretory material thus retained evidently acts as an irritant, increasing the susceptibility of the fibrous tissues, and the plasticity of the blood, and thus placing the individual in the most favorable condition for the development of active rheumatic inflammation, with general fever from the temporary action of any exciting cause; or without any such intervention, by long continuance, inducing those slow hypertrophies and indurations of the fibrous and connective tissues, in different parts of the body, that constitute the purely chronic rheumatic affections so frequently met with in all cold, damp, and variable climates.

The most prominent characteristics of the climate in the whole Northern belt of our own country, from the eastern foot of the

Rocky mountains to the Atlantic coast, are long and very variable transition seasons (spring and autumn), with a predominance of cold and dampness. And it is exactly over this same belt of country that the population furnishes the highest ratio of the prevalence of rheumatic and catarrhal diseases, as shown many years since in the admirable work on the climate and diseases of the United States, by Dr. Samuel Forrey, formerly of the medical staff of the United States Army, and confirmed by the statistics of Dr. Daniel Drake, in the first volume of his work on the topography and diseases of the great interior valley of this continent. While it is true that the rheumatic diathesis is generally the result of habitual retention of excretory products capable of increasing the excitability of the organized tissues and plasticity of the blood, such retention is not always the result of unfavorable atmospheric or external impressions. On the contrary, I have seen numerous instances in which the same pathological conditio were reached, in some cases by protracted muscular exercise by which the products of tissue metamorphosis were developed faster than they could be eliminated through the natural channels; and in others, by such changes in habits or occupation that a previous habit of active out-door physical exercises sufficient to excite daily increased cutaneous exhalation, was exchanged for one of confinement or purely passive exercise, and consequently less activity in the cutaneous surface.

The gouty constitution or diathesis like the rheumatic, involves an increase of susceptibility in the fibrous or connective tissues, but with less plasticity of the blood, and more tendency to deficiency of the red corpuscles; and the causes most efficient in producing it, are such as directly lessen the action of oxygen in the natural processes of tissue metamorphosis, and the evolvement of those products that are eliminated by the kidneys, instead of the cutaneous structure. The presence of alcohol in the blood lessens the interchange of oxygen and carbonic acid gas through the lungs, and retards the molecular changes in the tissues; consequently its moderate daily use in the form of wine and other fermented drinks, keeps the blood in a state of imperfect decarbonization, diminishing the action of oxygen on the carbonaceous elements of the tissues, and

favoring, first, fatty accumulations and subsequently, fatty degenerations. If the individual thus habitually using, moderately, alcoholic drinks, at the same time indulges the appetite for animal food, and takes very little muscular exercise, he will fail to eliminate the elements of urea, uric acid and the salts of sodium through the kidneys sufficiently fast to prevent the blood and tissues from retaining them in excess. It is the habitual presence of this excess of elements naturally excreted by the kidneys, in connection with the imperfect oxygenation and decarbonization of the blood, that induces those changes in the properties of the tissues which constitute the special gouty diathesis; and that every now and then cause the accumulation of such an amount of uric acid and urate of sodium as to excite the characteristic local nflammations of acute and chronic gout. In some instances the pathological conditions just mentioned as constituting the gouty diathesis, have been produced by habitual indulgence in the use of rich food, and the avoidance of all active physical exercise, without the use of either fermented or distilled liquors. But such cases are very rare, and so far as they have come under my observation there has been reason to suspect some degree of hereditary predisposition derived from the more remote ancestry.

Pathological Inferences—Fro .i what I have now said in regard to causes capable of favoring the formation of constitutional diseases and their mode of action, you may deduce the following pathological conclusions:

First. That all the affections of this class involve, as a primary pathological condition, such a modification of the properties of the organized structures of the body as to render them morbidly susceptible to impressions, and to alter the molecular movements concerned in the processes of assimilation, nutrition and metamorphosis of tissues.

Second. The modification of properties just mentioned may result from hereditary transmission, or from the moderate but long continued action of such causes as are capable of either impairing the processes of assimilation and nutrition; or those of tissue metamorphosis and the excretion of waste products.

Third. In scrofula, tuberculosis, Addison's disease, and pernicious anæmia, the special modification of tissue properties is

such as to increase the susceptibility by which the patients become morbidly sensitive or unduly influenced by almost every kind of external impression, and such an impairment of vital affinity that the formative processes by which the elements of tissues are evolved in the blood and attracted to their proper places in tissue growth and repair, are rendered imperfect and result in the formation of aplastic or cacoplastic material, as found in the caseous and tuberculous deposits and degenerations; or so greatly impaired as to arrest the formative processes altogether, as in the pernicious anæmia.

Fourth. In leucocythæmia and carcinoma there is less alteration of the susceptibility or excitability, but such an alteration of the vital affinity or force, controlling the formative processes as to result in an increase of the leucocytes and lymphoid cells, leading in the one disease to their marked excess in the blood, with hypertrophy of the adenoid glandular structures in different parts of the body, and in the other to a more specific and localized cell and fibrous development, constituting the varieties of cancerous tumors capable of development chiefly in the dermoid and glandular structures containing epithelium.

Fifth. In rheumatism or gout, the general diathesis or modification of tissue properties is such as to increase in a marked degree the susceptibility or general irritability of the organized structures, and to so modify the molecular movements in the metamorphic and excretory processes as to cause the retention and consequent accumulation in the blood, of an excess of certain excretory products, which, by their action on the already morbidly susceptible tissues, are capable of exciting the specific local inflammations of rheumatism and gout. In the present status of pathological investigations, I may state it as probable that the retained excretory products in rheumatism are chiefly lactic acid, and the lactic acid salts; and in gout, the uric acid and urates.

Principles of Treatment.—From the statements I have made concerning the causes and general pathology of the whole class of constitutional diseases, you will readily perceive that their practical management involves two distinct objects, namely: the removal of the general constitutional vice or predisposition, and

the treatment of the various local affections that may appear from time to time during the progress of each individual case. The accomplishment of the first object will depend, mainly, on our ability to remove the patient from the further action of those causes and influences that favor the development of the particu-diathesis in question, and to substitute in their place such hygenic and sanitary measures as will bring a strong influence in the opposite direction. As all these diatheses, when not hereditary, are the result of influences acting moderately through long periods of time, so they can be removed only by influences acting with equal persistence in such direction as to induce an opposite effect. In all these affections, so far as the constitutional condition is concerned, a resort to active temporary medication of any kind, is both unphilosophical and useless. And yet, there are some medicines capable of affording material aid to the patient, if properly selected, given in moderate doses and continued for a long time. One of the chief difficulties in treating successfully all constitutional diseases and defects, is the inability of the patient and his friends to appreciate the necessity for persistence in the use of whatever remedial agents or influences are deemed necessary. It seems difficult for them, and sometimes even for the physician, to realize the fact that morbid conditions and processes which have been years in developing, or may have been inherited, cannot be removed or permanently corrected by the use of this or that remedy for a few days, or by a vacation from school or business, and a change of air, exercise, or climate, for a few weeks, or at most, a few months.

Consequently we see but few well devised and persistently executed plans of treatment adopted for either preventing or curing the constitutional conditions now under consideration. As a general rule you see the children of scrofulous, tuberculous, cancerous, syphilitic, and gouty parents, receiving no more attention in regard to their physical training than those of healthy parents. Yet it is during the period of childhood and youth, while the structures of the body are undergoing active development, that we have the best, if not the only, opportunity to correct such morbid tendencies as result from hereditary influence. And every physician should regard it as one of his most important

professional duties to note the special morbid tendencies of all the families who rely upon him for medical services, and be as careful to point out the means for correcting them, as he is to prescribe medicines when they are actively sick. The family physician should realize that he is the guardian of the health of the families by whom he is employed, and he should so far interest himself in the welfare of the children especialy, that in his professional intercourse he should make such suggestions from time to time regarding the physical exercise, diet, dress, and education of the children as may be necessary to correct hereditary defects or acquired morbid tendencies during the years when such corrections are possible. I cannot too strongly impress upon each one of you the importance of this subject.

As the leading pathological, or morbid elements of the scrofulous and tuberculous diatheses are undue excitability, coincident with impairment of vital affinity or formative force, and possibly deficiency of the phosphatic and calcium compounds in the blood, so the remedial measures adopted should be such as are most efficient in lessening the former and in increasing the two latter. Among the most important of these measures is a plentiful supply of dry pure air, at a genial temperature for outdoor exercise or exposure; a sufficient quantity and variety of nutritious and easily digestible food; clothing of such quality and so adjusted as will best protect the cutaneous surface from sudden and severe atmospheric changes, and leave all the important movements and functions of the body free from mechanical interference; and such habitual daily muscular or physical exercises as tend to increase the development and strength of the muscular structures generally, and especialy those of the chest and upper extremities.

The heads of all families should be fully advised by their physician of the necessity of free ventilation in every part of their dwellings, and especially in their sleeping-rooms. Neither children nor adults should be allowed to sleep in cellar or basement rooms, or rooms anywhere that do not admit of free ventilation and sunlight, and afford, when closed, at least 800 cubic feet of space for each person occupying them. The physiological law, that regular habitual exercise, within certain limits, increases the

amount and improves the quality of nutrition, is one of primary importance, as affording a means for correcting the defects and inequalities of development, whether hereditary or acquired, which exist in a large proportion of all the varieties of constitutional disease. By good air, a fair variety of good food, and regular daily exercise, weak and slender muscles can be made compact and strong; narrow chests with deficient air space can be made broader and more capacious; and with a more complete oxygenation and decarbonization of the blood will come healthier secretory actions and more perfect digestion, assimilation and nutrition. Thus, a bad constitution, or decided predisposition to disease, can be changed into one healthy, and even strong. But it requires much time, judicious direction, and undeviating steadiness of purpose in the daily execution of the work or play directed. And when the morbid conditions or defects have become well developed, and the period of growth nearly or quite completed, before the systematic work of correction has been commenced, it may become necessary to add to the hygienic and sanitary measures already alluded to, a change of climate either temporary or permanent. As a general rule, you will find it most beneficial to send those who have been habitually living in interior valleys, of moist and alluvial formation, either to dry, mild, and elevated mountain ranges, or to the sea shore or on on sea voyages.

Those whose chief defects consist in slender muscles, narrow chests, and undue sensitivenesss of the respiratory organs, will do best in the mild, dry and pure air of the mountains; while those whose defects are chiefly in the digestive and assimilative organs will do best in the more stimulating and alterant atmosphere of the ocean. And yet those who have either inherited or acquired defects while permanently residing near the sea, will often be equally benefited by a change, either to the interior valleys or mountains.

If, in the management of the scrofulous, tuberculous, and kindred diatheses, medicinal agents are resorted to, they should be of such a nature as to be capable of diminishing the general excitability and of promoting the efficiency of the assimilative processes. In other words they should be soothing, tonic, and cor-

rective, or mildly alterant. In former times small doses of the aqueous solution of iodine, given in some mildly sedative vegetable infusion soon after each meal-time, were much used and with good effect. The vegetable infusions most used were those of the sarsaparilla, prunus virginiana, cimicifuga racemosa, and pipsissewa. During the last fifteen or twenty years I have had frequent occasion to recommend for the same purposes a combination of two parts of the syrup of iodide of calcium with one part of the fluid extract of humulus lupulus, or hop. To patients over fifteen years of age, four cubic centimeters (fl. ʒi) of this mixture may be given just after each regular meal-time. To younger children the dose should be less. If the patient becomes weary of taking this, I substitute the syrup of lacto-phosphate of calcium for two or three weeks, after which the other can be resumed.

But in counteracting the constitutional predispositions now under consideration, no medicines, however long their use may be continued, can be relied upon to the exclusion or neglect of the hygienic and climatic influences to which I have referred.

The diathesis or constitutional condition favoring the development of the various forms of cancerous or malignant growths is one of the most obscure in the list of chronic general diseases. I am aware that many of the pathologists and practical surgeons of the present day regard all this class of morbid structural developments as primarily local, and claim that the general cachexia or diathesis is secondary, and the result of the diffusion of the cancer cells, or germs, originating in the local affection. But the fact that the predisposition to the disease is capable of hereditary transmission, while the local development of cancerous structure is often postponed until after the middle period of life, shows that there must be some deviation from the strictly healthy condition of the properties that govern the combinations of organic matter in the development of tissue elements, prior to the first germ of local morbid structure. Again, the fact that in a very large majority of cases cancerous growths re-appear after the earliest and most complete removal of the first unhealthy structure, points to the same conclusion. I have assumed, therefore, that there is a cancerous diathesis, or constitutional predisposition, which, if not

removed, will, in due time, lead to the development of some variety of cancerous structure. In a large proportion of cases this diathesis is the result of hereditary influence; but that it may be acquired without such influence is also proved by the history of many cases in which no prior existence of this form of disease can be traced in either line of ancestry.

By what circumstances connected with diet, drinks, modes of living, or climate, the formation of such a diathesis is favored or counteracted, very little is known. In 1866 my colleague in the department of surgery, Dr. E. Andrews, by a careful and accurate examination of the mortality statistics of this country, as returned by the United States census for 1860, found a much higher ratio of deaths from cancerous diseases in the six New England States, and next in New York, Pennsylvania, New Jersey, and Delaware, the ratio steadily diminishing as he progressed south through the Atlantic States to the peninsula of Florida. The ratio was higher in the States occupying the northern part of the interior valley of the continent than in those farther south, the lowest ratio of all being in the extreme southwest, embracing the States of Texas, Missouri, Louisiana, Arkansas, and New Mexico. The last named State returned only one death from cancer, to two hundred and seventy from all diseases, while Vermont returned one from cancer to forty from all diseases. These figures would appear to show that the prevalence of cancerous affections was favored by a cold, variable, and damp climate, such as that which characterizes the northeastern and northern belt of the United States, and to be opposed by one that is mild and dry.

A more thorough examination of this part of the subject will probably demonstrate the proposition that cancerous affections prevail most wherever a cold and variable climate coexists with density of population, thereby following very nearly the same law of prevalence as scrofula and tuberculosis.* Many facts have come under my own observation favoring the idea that a liberal use of meat, coupled with in-door occupations, or sedentary habits, had a tendency to increase the cancerous predisposition, as it certainly does the local cancerous growths after they have com-

*See Relations of Cancer and Consumption to Climate in the United States. By E. Andrews, M. D. Chicago Medical Examiner, Vol. VII., p. 737. 1866.

menced. In the present state of medical knowledge, perhaps the best advice you can give to parties who, from known hereditary predisposition or otherwise, are desirous of counteracting the development of cancerous diseases in any of the structures of the body, is that they shall live in a mild, dry climate, remote from and elevated above the sea; to take free exercise in the open air; to use meat only sparingly; and wholly avoid all use of alcoholic drinks and tobacco. The principles that should govern us in the management of the rheumatic and gouty diatheses are plainly inferable from what I have already said regarding their mode of development; and the details of their application will be further explained when I come to speak of the active local developments of these affections. Having completed what I deem important to say regarding the general management of constitutional diseases, I shall reserve the consideration of the treatment necessary after local affections have become apparent, until I call your attention to each of the several diseases included in this group separately.

THE AGE OF GERMAN MEDICAL COLLEGES.—The university of Prague was founded anno Dei 1348; Vienna 1365; Heidelberg 1386; Leipzig 1409; Freiburg 1454; Greifswald 1456; Basel 1460; Munich 1472; Jena 1558. Wuerzburg, 1582; Göttingen 1737; Berlin 1810; Zurich 1833. Wuerzburg is celebrating this year its third centenary jubilee.

BERN (SWITZERLAND).—The law enforcing vaccination has been rejected by the popular vote. (There are some "cantons" in Switzerland which are just 500 years behind the present time, the dark shades arising from the mountains shortening the convolutions of the brains of the inhabitants).

PROF. GERMAIN SEE, the well-known French physiologist, has written an article (*L'Union Médicale*) on the effects of convallaria majalis, recommending the remedy highly in all diseases of the heart.

Original Communications.

ARTICLE II.

SEWER-GAS, AND ITS EFFECTS UPON HEALTH. A Lecture by BYRON W. GRIFFIN, M.D., Lecturer on Etiology and Hygiene, in the Woman's Medical College, of Chicago.

No one thing so much affects our physical well being as the air we breathe. Probably not one person in ten thousand is surrounded by perfect atmospheric conditions. The air is rendered impure by many causes. But it is safe to say that, among the harmful influences which can be named, none occupies a more important place than sewer-gas. "It is the *béte noire* of town residences." Many of the diseases which attack and destroy life among dwellers in cities are the result, either directly or indirectly, of this noxious agent, commonly known as sewer-gas. Sanitarians have already reached that place where, if the code of health laws they have framed could be promptly and efficiently enforced, many of the diseases now enumerated in the nomenclature of the medical man, would entirely disappear. Think, for a moment, of the large number of etiological factors entering into the causation of the different diseases met with in a large city. Adulterated food, overcrowding, filthy streets and alleys, improperly constructed dwellings, vitiated air, all these combine to swell the grand total of sickness and wretchedness existing in most large cities. Very few people, comparatively, take these causes of disease into account. Very few persons appreciate the dangerous character of sewer emanations. They move into a house which is tastefully papered and painted. The arrangement of the rooms is admirable, and the location, for a residence, unexceptionable. Concerning the sewerage they

have never stopped to think. "It must, as a matter of course, be all right in such a fine-looking residence." People say "Our doctor has never mentioned the subject of sewer gas. If it is of such vital importance, why should he not have spoken of it?" Why, indeed? The aches and pains, and languor and lassitude which people feel are more often directly traceable to sewer-gas poisoning than is commonly believed. The question, reduced to its lowest terms, is something like this: Where there are sewers, we usually can expect to find sewer-gas. This gas is poisonous to life and health. Its disposal is a matter of the most vital importance. It must be imprisoned in a sewer or be allowed to escape into and mingle with the atmospheric air, or it may find its way into dwellings and be breathed by the inmates. Here are three ways of managing this toxic agent. The last mentioned is disastrous to health, and should be prevented. In some cities, and Chicago has made the experiment to a limited extent, the plan of ventilating sewers is in vogue. Openings in the center of the street, protected by perforated iron covers, allow the escape of sewer-gas into the atmosphere of the street, and also, at the same time, permit the ingress of atmospheric air into the sewer. To my mind, this is a most sensible plan for diluting and rendering impotent a certain amount of sewer-gas poison. It is not claimed that this method of diluting sewer-gas is sufficient to meet all the demands. The plan is good as far as it goes, but it does not do away with the necessity for traps at sinks and closets. There are at present several kinds of apparatus which prevent the escape of most of the sewer-gas contained in the waste-pipes. That they do entirely prevent the entrance of sewer-gas into living rooms is probably not true, although the inventors of the various kinds of sewer-traps claim that no gas escapes.

Sewer-gas can not follow its victim into the open air, or if it does, its power is destroyed by the admixture of atmospheric air. It is a domiciliary foe. As such it must be met, and fought, and conquered. Either shut it out, exclude it entirely, or antidote its poison by atmospheric air.

Sewer-gas is not always a rapid poison. It does not always kill. Its approach and attack are frequently so insidious and

stealthy that the victim is not aware of his danger. People are often inhaling enough sewer-gas to affect the health, and at the same time unaware of its presence. This subtle and intangible character of sewer-gas is what makes it such a dangerous enemy. "Ordinary sewer-gas is composed of either or all of the following gases: Sulphureted hydrogen, carbureted hydrogen, carbonic acid and ammoniacal vapors, besides some others." Odor is not always a characteristic of sewer-gas. Physicians who are able to recognize the effects of sewer-gas poisoning, can do an incalculable benefit to their patrons by giving them timely warning. There is no need to exaggerate. The bold statement of facts is, or ought to be, enough. Diphtheria, small-pox, and scarlatina are carried on the "invisible wings" of sewer gas to different parts of the city. There can be no doubt that these formidable and ever-to-be-dreaded diseases are scattered broadcast through the agency of sewer emanations.

The blocks and flats put up in cities are frequently built *to rent*. The owner consults an architect, who draws the plans. Then a contractor undertakes the work of construction. Too often the contract is let to the "lowest bidder," without any thought of his real ability to do good work. He sub-lets the stone and brick work, and before the block is ready for occupancy a dozen or score of different firms have had a hand in the work of erecting the building. The plumber is under contract to furnish the lead pipes and to equip the building with all the necessary apparatus for carrying off the waste of domestic life, and for preventing the ingress of sewer emanations to the living rooms. Too often he employs cheap and unskillful workmen, who slight their work, and thus endanger the health of the future occupants of the building. In neglecting to make perfect joints, and to properly trap every sink and closet he is committing a crime against society of no small magnitude. The builder of a ship might better put a rotten plank into the hull, than that a plumber should do dishonest and unskillful work. The house is to be occupied for years to come.

A failure to construct properly that part of the building which is designed to carry away the refuse, is many times followed by fatal consequences. The plumber's work is, when the building

is completed, nearly all concealed from view. Only a system of house inspecting by men qualified for the work, and honest and trustworthy, and above receiving "hush money" for slighting their duties and closing their eyes to imperfect plumbing, only this can save us from the dangers of breathing foul gases from sewers. If the painter or glazier, or grainer fails to take the pains, in doing his work, he ought to take, nobody's health suffers thereby. The plasterer and roofer can do shoddy work, and still not endanger human life. That there are intelligent, capable and honest plumbers no one can deny; but the rank and file of this body of useful artificers are not so skillful and efficient as they ought to be. Professor C. A. Lindsley, of Yale College, affirms that "sewer-gas is so subtle that its presence is many times not detected, and yet so laden with the germs of disease that diphtheria, scarlet fever, typhoid fever, and other fatal maladies are the sure event to those who dwell in such air-poisoned houses." He further says: "It is a species of crime to permit property owners, through ignorance, or for any other reason, to go on unrestrainedly putting numbers of our fellow-citizens in danger by connecting houses with sewers without adopting the safeguards necessary for their protection." Sewer-gas is no myth. It really exists, and is in active operation day and night, lowering the vitality and vitiating the blood of thousands of unsuspecting people. "Men who will spend thousands of dollars in painting, gilding and carving their houses, will not spend one cent to make sure that the air they and their families breathe is not reeking with dangerous impurities, which would make their hair stand on end with horror could they see them magnified a few hundred times." Doctors know something about these dangers, although not half what they ought to know. Many contend that their mission and business is to cure, not to prevent. Sewer-gas furnishes them with employment from year's end to year's end. When sickness appears, the doctor is called in at an expense of hundreds of dollars; whereas, a few dollars spent in making sure of one's drains every year would obviate the necessity of a physician. Says Professor Chandler, of New York City, the eminent chemist: "It should be thought

of far more importance to clean one's drains and traps every year than to shake one's carpet and to paint one's house."

I will now give you a brief sketch of a case upon the authority of Professor Walter S. Haines:* A young man and two younger sisters were brought to their beds by sickness, and for the space of two months two physicians gave them constant attention, and all this while were absolutely ignorant of the cause of their prostration. The two girls lost for the time the senses of speech, hearing and sight, and both were attacked with with hemiplegia. The cases growing more desperate, another physician was called in. He, recognizing sewer-gas poisoning as the malady, caused the patients to be removed to another house, soon after which they began to recover, and ultimately regained their health. An examination of the drain of the house where these patients were taken sick showed that it was broken in numerous places, and gas was escaping. The main drain (usually placed under the house), frequently breaks from unequal settling of the ground on which it rests, by the weight of the walls, or because the joints are imperfect when made.

I learned the following facts in a conversation with Dr. F. A. Stanley, of this city: He was called to see a child sick with diphtheria. Two days later two more children belonging in the same family, were stricken with the same disease. He gave the cases his most assiduous attention. Nothing in the ordinary line of therapeutics was left untried. Drugs were of no avail. The children grew rapidly worse. Sewer-gas was thought of as the possible cause of all the trouble, but on account of the apparently excellent condition of the drainage, this idea was given very little attention. The children continued to grow worse. One died. The faith of the family in their physician was receiving a severe test. The second child soon followed the first. The third child was growing worse. Then, at last (and all these things just related transpired in a very few days), the fourth child was stricken down with diphtheria. Sewer-gas was once more thought of as possibly being an etiological factor in the causation of all this suffering. At an outlay of considerable

* I quote from "Sewer Gas and Its Dangers," by Geo. Preston Brown.

labor, the house drain was examined, with the expectation of finding it in good condition. On the contrary, it was found to be in a most imperfect condition. Where the waste pipe emptied into the main drain, a broken joint was discovered. The soil was saturated for yards around this leaky joint with the refuse from the kitchen and water-closet, and thus the enigma was solved. The drain was repaired and the sick children were removed to another part of the house. One recovered. Can there be any reasonable doubt that the blood-poisoning in these cases came from sewer emanations? In February of this year I was summoned to attend Mr. J. T., a salesman for a leading dry-goods firm of this city. He was strictly temperate in his habits. I found him on the third day after he had stopped work, with a temperature of 104.2-5° Fahrenheit, a rapid and somewhat feeble pulse, a tongue heavily loaded with brown fur. He said he suffered from no pain whatever. He complained principally of an almost uncontrollable feeling of languor and fatigue. Countenance pale, eyes sunken, breath offensive, perspiration excessive. I administered remedies to reduce the temperature, but succeeded only indifferently. This patient continued to grow rapidly worse, and within one week from the time of his first attack he was dead. Subsequent inquiry revealed the existence of a defective drain under the store where this unfortunate man was employed.

Additional corroborating evidence, in favor of the theory of sewer-gas poisoning, was found in the fact that several of the employés in this same store were, about this time, ill from what, as near as I could learn, was blood-poisoning. Chloride of lime had been used plentifully in the basement of this store, in the vain hope that the gods might be propitiated in that way. A liberal use of "jockey club" or "white rose" upon the person of an unwashed and malodorous tramp would be parallel treatment to this. It is probable that this man's life could have been prolonged had the necessary precautions been taken to see that the building, in which he spent more than twelve hours a day, was in proper sanitary condition.

The knowledge of this and like cases is, or ought to be, of practical benefit to every physician. The drainage and sewerage

of every building, containing a patient under the care of a medical practitioner, ought to be taken into account as a possible etiological factor in the production of many diseases. Scarlatina and diphtheria are diseases which every physician dreads to encounter. If sewer-gas poisoning has to do with either the causation or fatality of these maladies, then the doctor who ignores or fails to inform himself as widely as possible upon this subject, fails to do his whole duty to his patrons. Dr. Z. P. Hanson, of this city, gives me the following notes of a case recently attended by him: He was called to attend the son of a gentleman living on the West Side. The case was diphtheria, severe from the first. Extensive ulceration and sloughing of the tissues of the throat were among the unfavorable symptoms. A servant girl, living in this same house, was about this time attacked with diphtheria in its most malignant form. Sewer-gas was strongly suspected, and though the owner of the house was inclined to be skeptical in regard to the agency of sewer-gas as a cause of the sickness of his son and servant-girl, he carried out the doctor's wishes, and employed a plumber to investigate the matter. To the surprise of the father a leaky joint was found. It had been attempted to make a curved joint out of two straight pieces of tile, by adopting the miserable, slipshod and criminal device of putting in a section of a collar, and endeavoring to join the two straight pieces of tile. The cement which had been used to close the seams in this joint had disintegrated and crumbled away, and nothing was left to hinder the contents of the drain from passing into the soil and saturating it with the house-slops. Since repairing the drain no sickness has occurred in the house, whereas, before this, some member of the household was ill a good deal of the time. This revelation of the defective character of the drain seemed to explain the probable etiology of a peculiar and fatal case of peritonitis, which had occurred in this same house some time previous to this last attack of diphtheria just mentioned.

It devolves upon every physician, practicing medicine in localities where the health of his patrons is menaced by this unseen foe, to warn the unsuspecting and put the public (or as much of the public as comes within his jurisdiction) upon its guard.

I am not insisting upon anything against which there is any considerable amount of opposition. The American Public Health Association is no longer a struggling and unpopular society, existing only through the efforts of a few enthusiastic workers. It stands upon as firm a basis as does its sister society and coadjutor, the American Medical Association.

The chemistry of sewer-gas ought to receive a passing notice. Dr. Letheby, the author of that standard work on "Food" declares that in all sewer-gas, are found sulphureted hydrogen, sulphide of ammonium, and organic matter. Beside these gases, are often present nitrogen and carbonic acid. In order to understand the deadly character of sulphureted hydrogen, it may be well to say that air, "otherwise pure, containing one part in two thousand of this noxious vapor, if breathed by birds is fatal to life." In the Luxembourg Gardens, in the city of Paris, the crows at one time became so numerous and so troublesome that they were a source of infinite annoyance to frequenters of the garden. To shoot them would endanger the safety of the people who resorted to the place. The following plan was carried out with success: The gardener was furnished with a bag or jar filled with sulphuretted hydrogen gas. Attached to this was a long, slender tube, which was slyly pushed up into a tree containing a number of crows. When the tube was in the midst of the flock, the gas was permitted to escape, and numbers of crows fell dead from the effect of the gas. "Air, $\frac{1}{200}$ part of which is sulphureted hydrogen gas, will kill dogs, if breathed by them, and one part in two hundred and fifty will end the life of a horse."

It is believed that air containing $\frac{1}{100}$ part of this noisome gas is sufficient to prove fatal to human life when inhaled for any length of time. Do you wonder that those unfortunate people who live in houses into which this deadly vapor enters are sick and languid, and unfit for active work? Is it any wonder that we hear of cases of sewer-gas poisoning in the practice of medical men? Is it not rather a marvel that the harm done and the disease induced by the inhalation of this dreadful agent, is not more widespread, not accompanied with more fatal effect than is really the case. Its known effects are, when breathed in air containing it,

drowsiness, headache, vomiting, incoherence of speech, etc., "A simple trace of it in the air will often produce a debilitated condition resembling typhoid fever," says one recognized as an authority on this subject.

It is probable that sulphuretted hydrogen and ammonium sulphide, when inhaled, affect the every seat and center of vitality. The red blood globules containing the compound known as hemoglobin, are robbed of the oxygen they contain, and thus their carrying power, as distributors of this indispensable element, is destroyed.

There is no doubt in my own mind, that many cases of mental and physical fatigue, supposedly the result of over-work, are caused by inhalation of sewer-gas and air made impure from stagnation and respiration. Bright's disease of the kidneys is said to be caused by sewer-gas inhalation, on account of the high arterial pressure it produces.

Says Dr. De Verona, of Brooklyn: "Very small amounts of sewer-gas may develop fatal ailments on the one hand, and on the other hand, large amounts may produce but slight derangements, and above all, the poison once implanted in a human being is capable of reproducing itself ad infinitum."

The question arises, how shall we disinfect sewer-gas and render it inert? The use of sulphate of iron and chloride of lime and carbolic acid are practically useless in combating with poison in the form of sewer-gas. For the disinfection and deodorization of open drains and even sinks, these drugs are pre-eminently efficacious if used with thoroughness and in sufficient quantities. But to prevent the ravages of sewer-gas by disinfecting water-closets and kitchen sinks with any or all of these drugs, would be unavailing, unless, indeed, every householder in the entire district where sewers were placed should disinfect his premises. Could this be done, disinfection might be practicable. But its non-feasibility is apparent when we remember the numbers of ignorant and filthy people who live in every large city, and who would not comply with any such rule as this unless they were actually obliged to do so. We need not inhale sewer-gas in any appreciable quantity if the plumbers and sewer builders will do honest work. In England the subject of house drainage has

received closer attention than in this country. Trans-Atlantic sanitarians found out years ago the dangerous character of sewer-gas, and with the thoroughness which distinguishes the English mind, have been studying out a way to banish it from their houses.

It should be borne in mind that the public, the lay members of the medical profession, derive most of their knowledge of hygiene and sanitary medicine from the physicians who are called into their families. These patrons will never think of asking in regard to the physiological action of eucalyptus globulus, or about the manner in which nux vomica affects the nervous system and digestive apparatus. But questions concerning ventilation, house drainage, diet, clothing, exercise, etc., are sure to be propounded. It should not be considered beneath the dignity of any medical practitioner to make himself familiar with all the details of house drainage and plumbing. Until this is done, he can not appreciate and measure the evils that arise from defective sewers and improperly constructed drains. It is too often the case, that men in this city, as well as in others, are licensed to build sewers and to equip dwellings with drains and waste-pipes, and traps, whose knowledge of the laws of natural philosophy is limited to the single fact that water naturally runs down hill. Until this slip-shod system of public service is done away with, and men are selected for this kind of work whose qualifications are of a higher order, we shall not see any marked improvement in house drainage.

257 *West Madison St.*

ARTICLE III.

AMNESIC APHASIA FROM WOUND OF LEFT ANTERIOR LOBES OF CEREBRUM AND LOSS OF BRAIN SUBSTANCE. PARTIAL RECOVERY.

E. Wyllys Andrews, A.M., M.D.

Michael Jordan, a young man æt. 25, while walking upon the railroad track near Joliet, Ill., was struck by a rapidly-moving train, and thrown from the track into a ditch, where he was found

insensible. Dr. Chas. Richards, of Joliet, who was called to see the injured man, gives the following account of his condition:

"On May 16, 1881, I was summoned to Minonka to attend a man who had been struck by an engine. I found him in a comatose state, the result of a compound comminuted fracture of the frontal bone, upon the left side. Opening some three inches in length, and valvular. After carefully examining the wound, I found a portion of bone driven into the brain to the depth of one inch. At this examination about one tablespoonful of brain substance exuded, and was washed away while removing the clotted blood from the external parts. After removing the fragment of bone, I dressed the wound by bringing the integument together with sutures and applying cold water compress. I left him, expecting him to die before morning, but was notified on the following day that Michael Jordan was alive, and, to all appearances, better. I visited him about 2 p. m., and had him removed to Joliet, where he was under my care until he was removed to Chicago. At my second visit he seemed to know what was said to him, but could not speak. This condition lasted for ten days, when he was able to say some words, but could not converse. He soon became able to tell his name, and place of residence in Chicago, and could say "Yes," and some few other words. During the time he was under my treatment I removed, in all, about two ounces of brain matter, after which an abscess formed near the posterior edge of the fracture. This discharged freely, and was treated with carbolic acid and the continuous application of cold water. At this time Jordan's mind was, in a measure, lost, and he did not seem clearly to realize anything."

Jordan remained under the successful treatment of Dr. Richards until convalescence was well established, when he was brought to Chicago, and cared for in the County Hospital for a number of weeks. At the time of his discharge the wound was nearly healed, and, when he fell under my observation at the South Side Dispensary, in July, only a small granulating surface required any local treatment.

At this time the patient's cerebral symptoms were remarkable in showing the decided impairment of one function—viz.: articulate speech—without serious injury to any other faculty.

As experiments upon lower animals can furnish no knowledge of language as a localized function, clinical reports of such cases as this are the only sources of knowledge regarding the exact location of speech centers. The want of post mortem evidence in this case deprives it of much of its value in evidence; but from external inspection, it is clear that the region of the excavation caused by the intruding fragment of bone, and the cavity of the subsequent abscess, must have been nearly in the usually-assigned region of speech, *i. e.*, the island of Reil, and the third frontal convolution on the left hemisphere of the cerebrum.

Jordan had been a man of weak intellect, bordering upon imbecility, so that his mental condition following the accident was but little worse than of old.

The cerebral symptoms began with coma, lasting for a few hours, followed by aphasia complete for ten days, and later slowly improving.

When first seen in Chicago, three months after the injury, the patient was quiet and passive in demeanor. Bodily vigor was unimpaired. The power of recollecting words was in a measure gone, so that utterance was extremely slow and labored, seemingly the result of intense effort and concentration of his feeble will. The patient disliked exceedingly to be put to the strain of uttering a response, and never spoke spontaneously. He seemed to labor intensely in uttering his monosyllabic replies. As to his mental power it was said by his family that he was not markedly worse than before the accident.

He presented upon the left side of the skull a depression back of the frontal eminence, two inches by an inch and a half, covering portions of the frontal and parietal bones. This corresponds to the size of the fragments of bone removed in the course of Dr. Richards' treatment. The scalp was depressed at this point one-half an inch, and pulsated visibly with the contents of the cranium.

The patient's friends informed me that at first he was subject to fits of anger, from which he is now mostly free, and that at such times the pulsations in the injured place were more noticeable, and the depression became a tumor.

As observed at a dozen different interviews, his aspect was that of childish imbecility. All his replies were rational and consequential, but his mind was seemingly a vacuum when he was not roused or called to concentrate his attention. There were no hallucinations. Morbid action seemed rather in the direction of weakened or depressed mental power. The only treatment adopted was occasional doses of bromides and cannabis, and a shield of gutta percha moulded upon a plaster cast to fit the concavity of the injured place and maintain a uniform pressure. This was designed partly to prevent the occurrence of outward bulging in the form of *hernia cerebri* or aneurism, and partly to guard the exposed brain from accidental puncture or concussion. The pressure of the apparatus, which was retained by an elastic cord worn under the hair, was a source of much comfort to the patient.

The loss of speech was now the most prominent symptom in which Jordan's condition differed from that before the injury. In January, 1882, a considerable improvement had taken place in the use of words, so that an intelligent answer would promptly be returned by the patient to any question requiring only "yes" or "no." Other questions, also, would be responded to with short replies, and there never appeared to be any incoherence in his expressions. A vocabulary of between one hundred and fifty or two hundred words seemed to be at his command, but any word would be repeated when given him without any defect of articulation. In February, since which time the patient has not been seen by me, the improvement was still more marked, the man's command of words being evidently more perfect as compared with his previous condition, and resembling that of a child in that he spoke mainly the names of objects without linking them into sentences.

Inasmuch as nearly total destruction of the left region of speech must have taken place, it is probably to be concluded that the right anterior cerebral lobes must have taken on the same function in a compensatory degree, unless it be supposed that in this case the injury of the island of Reil was something in the nature of plastic or other deposit, which became absorbed in the later stages of the recovery.

Society Reports.

ARTICLE IV.

CHICAGO MEDICAL SOCIETY.

Stated Meeting, held August 7, 1882. Dr. G. C. Paoli, President *pro tem.*

TWO CASES OF CIRRHOSIS OF THE PANCREAS IN PRIVATE PRACTICE, BY DR. C. W. EARLE.

Case I.—Mr. G. E., æt. sixty-five, in November, 1880; temperate; no history of syphilis. Began to emaciate at beginning of 1880; did not care to eat meat; was weak, short of breath; tongue white; and there was a murmur with the first sound of the heart. Slight pain manifested on pressure at the epigastrium. Was occasionally sick at the stomach. Legs slightly œdematous. Stools black; occasionally containing little lumps of blood and mucus. No diagnosis possible from the symptoms present. Treatment consisted of tonics, mineral acids, and a generous diet. Dr. N. S. Davis saw the case in consultation. Both came to the conclusion that there was some grave affection of the digestive system which would probably result in death. Patient died in the course of a month.

Post-mortem.—Marked whiteness of all the tissues. Pancreas white and indurated. It was examined by Dr. S. J. Holmes, who found it contracted; abnormal in consistency; fibrous to touch. The microscope showed much increase of connective tissue, with obliteration of certain glandular vesicles and atrophy of others, resulting from the compression exerted by the newly formed connective tissue. There was slight, fatty degeneration of the parenchyma of the kidney.

Case II.—Mr. S. K. R., æt fifty-seven. Two years ago began to fail in strength, but continued business till within two months of his death. Had had hæmorrhoids for five or six years. Had been troubled with indigestion for some years, and had a bilious attack a year ago. In February, 1882, he passed considerable blood by the rectum, and continued passing blood in his stools, and suffered much pain at the same time. Lost sixty pounds; skin white; pulse, respiration and temperature normal. Antipathy to meats; gained a few pounds under treatment with tonics, mineral acids, pancreatine and pepsin. He had alternate diarrhœa and constipation; pulse was as low as 55 at times. Later he was treated by massage, with relief of his bowel affection. Pain remained near the ensiform cartilage. He now expectorated a large amount of mucus, and vomited a large amount of coagulated blood; probably two pounds. He died June 30.

Post-mortem.—The abdomen alone was opened. There was considerable fat between the integument and abdominal muscles; whiteness of tissues. The pancreas was hard, enlarged, and filled with spots, plainly seen with the naked eye. The bowel was somewhat contracted in some places; no trace of disease of the rectum. The hæmatemesis had probably been caused by pressure of the head of the pancreas upon some blood-vessel, but there was no breach of continuity in the mucous membrane of the stomach.

The pancreas measured nine inches in length, was denser and larger than normal, and presented numerous yellow-white spots one-fourth or one-half inch in diameter. Marked increase of the pancreatic connective tissue.

Dr. L. C. Waters reported a complicated case of scarlatina, which came under his treatment February 23, 1882. The patient, æt. eight years and three months, had a chill, a soreness of the throat, a temperature of 104 2-5, and a pulse of 126. There was constipation and vomiting. The tonsils were swollen. A scarlatinous eruption appeared the next day, when the temperature arose to 105 9-10, and there was delirium. In the course of eight days, under ordinary treatment, the patient was better, and the eruption had disappeared. On ninth day, patient fell

worse; his pulse beat 150 a minute; the temperature was 102; there was fœtor of the breath, and there was considerable swelling of the throat externally, extending to the cheeks on both sides. A false membrane formed in the throat. Upon removing a portion of this, there was bleeding from the exposed surface. Twenty-eight hours later the patient was dead, no treatment being of any avail.

The treatment adopted in this case was as follows: At first a cathartic was given for the constipation. Patient was sponged thoroughly all over the body with tepid water three times a day. Cold applications were made to the head. Quininæ sulphas in doses of two grains every four hours; tinct. of iron and potassii chloras were also given. Cold applications were made to the throat. The doctor regarded the last complication as diphtheria, which was sometimes liable to arise in cases of scarlatina.

Dr. R. N. Isham reported a case of rupture of the left kidney, with autopsy, and the society adjourned for the rest of the summer.

ARTICLE V.

IMMIGRATION AND DISEASE.

The following report from the Supervising Inspector, and the Secretary of the National Board of Health, is worthy of being placed on record, for the purpose of showing the relations of immigration to the prevalence of diseases of an infectious and contagious character.

The facts stated show clearly enough that our government should enforce more rigidly regulations calculated to prevent the importation of diseases. And if such enforcement should deter some persons from coming, it would be no injury to any legitimate interest on this side of the Atlantic.—ED.

OPERATIONS IN THE ILLINOIS DISTRICT DURING THE PAST MONTH.

SPRINGFIELD, ILL., AUGUST 4, 1882.

SIR:—I have the honor to submit the following report for the month of July, of the operations of the Immigrant-Inspection Service, N. B. H., in the district under my supervision.

During the month an aggregate of 21,000 immigrants were inspected by the assistant inspectors, who found about sixteen per cent. of these unprotected, liable to contract small-pox and to propagate the disease. The necessary precautions were taken with all of these cases, as well as with one case of varioloid found in transit, and several convalescents, one being an immigrant removed from a train and treated in the small-pox hospital at Rochester during the month of June.

Although there is a marked improvement in the character of the protective work done on shipboard, as compared with that noted on beginning inspections, this is by no means uniform, as will be seen by the following extracts from the assistant inspectors' notes of careless, imperfect or neglected vaccinations and revaccinations:

Steamship Republic.—Practically worthless; no adult vaccinations.

General Herder.—None showed successful vaccination.

Strasburg.—Very poor; only eleven successful out of 340 vaccinations—result evidently due to want of care on part of steamship surgeon.

Hermann.—Only thirteen properly protected out of 410; the vaccination performed on shipboard very unsatisfactory. All passengers provided with protection cards.

[These vessels, the *Strasburg* and *Hermann*, are regular Baltimore packets, and the latter, at least, is known to have been the means of introducing small-pox into five localities in Illinois during the past spring.

It might be profitable to inquire to what extent such vessels and the neglect of their surgeons are responsible for the present prevalence of small-pox in Baltimore.]

Rhynland.—None showed successful vaccination on shipboard.

Mosel.—No successful vaccination by the ship's surgeon.

Jason and *Sardinia.*—No ship vaccination met with in passengers from either vessel.

St. Germain, Ethiopia and *Wieland.*—None vaccinated on shipboard; many totally unvaccinated children provided with ship's protection cards.

Main and *Surrey.*—Nearly all unsuccessful.

Britannic and *Italy.*—Vaccinations on shipboard generally poor.

Devonia and *Warwick.*—Over one-half of the passengers by these two steamers were found to require vaccination, although all were furnished with ship's surgeon's cards, which, they had been told, would prevent any other physician from interfering with them.

City of Brussels.—Extremely little attention appears to have been given to the examination of the immigrant passengers while on board. One of these passengers, a Finn, twenty-eight years old, was found on a train nearing Chicago, July 24; was in the eruptive stage—eruption probably 80 hours old. He presented a vaccination-protection card, signed William Gibbons, Surgeon, *SS. City of Brussels*, and dated July 20, 1882.

Illinois.—A few only vaccinated.

Nebraska.—Poorly revaccinated.

Indiana.—Two-thirds required revaccination. No cards had been furnished any immigrants.

Concerning these cards, it is noted that in many instances they bear no name of steamship or line. One such, presented by a lad thirteen years old, and without the slightest evidence of vaccinal protection, bore the name of John W. Watson, Surgeon.

On July 28, among passengers by the steamer *Erin*, were found ten convalescents who had had small-pox within a month before leaving Ireland.

Notwithstanding that the aggregate number of inspections was less in July than in the preceding month, the relative number is much larger. Immigration has probably fallen off one-half since May last, and it is believed that of the total number now arriving, very few find their way into Illinois or cross the State without being subjected to one or more rigorous inspections. The

reports of small-pox outbreaks in the region west of the Mississippi river have been notably less during July, while in this State there has not been a single case reported during the month, outside of Chicago. The following table shows the steady decline of the disease in that city:

Month.	Cases Reported.	Deaths.
April.....	321	92
May	281	65
*June.....	124	29
July.....	44	11

* Inspection begun June 1.

At the close of the month there were only ten cases under treatment in the city, and one in the State at large.

In other districts of the service it is observed that increased familiarity with the work has secured increased efficiency, and thus materially lightened a labor which was found to be very onerous during the first month. For example: The vaccinations found to be necessary among passengers arriving over the Grand Trunk road in June were very nearly 36 per cent. of the total inspections. During July, owing to the increased number of vaccinations at Port Huron, Mich., this percentage has been reduced to 8.3 per cent.

Many cases of cholera infantum, measles and whooping-cough are met with by the inspectors, who, so far as time and opportunity serve, render such medical assistance as is necessary.

The railway service has continued to afford every desired facility to the inspectors, and, aside from the advent of an occasional unannounced train over a connecting line, every emergency has been promptly met. The coaches for immigrant passengers are kept in good sanitary condition, and the general welfare of these people seems to be consulted on business principles.

Appended is a table showing the number of inspections and of vaccinations by each inspector for the period between June 1 and July 31.

I am, sir, very respectfully,

JOHN H. RAUCH, M.D.,
Supervising Inspector.

DR. THOS. J. TURNER, U. S. N.,
Secretary N. B. H.,
Washington, D. C.

IMMIGRANT-INSPECTION SERVICE, N. B. H.

ILLINOIS DISTRICT.

Inspections and Vaccinations by the Assistant Inspectors: June 1—July 31, 1882.

INSPECTORS.	STATIONS.	JUNE.		JULY.		JUNE 1 to JULY 31	
		No Inspct'd	No. Vacc'd.	No. Inspct'd	No. Vacc'd.	No. Inspct'd	No. Vacc'd.
R. E. Starkweather, M.D.	P. Ft. W. & C R	5895	592	3452	398	9347	990
Jas. G. Kiernan, M D.....	L. S. & M S R R	4641	415	1828	547	6469	962
W. F. Bundy, M.D.....	M. C. R. R.....	7515	1565	5835	1484	13350	3049
*J. J. Farrell, M.D.....	Gr. Trunk R R	4028	1450	2551	212	6579	1662
*F. C. Newton, M.D.....	B. & O. R. R...	2439	242	2398	498	4837	740
†E. S. Elder, M.D.....	Indi napolis....	992	43	3079	268	4071	311
W. B. Conery, M.D.....	E. St. Louis.....	1511	44	1784	41	3295	85
Totals.....	.....	27021	4351	20927	3448	47948	7799

* Inspections began June 1. † Inspections began June 20.

ARTICLE VI.

AMERICAN PUBLIC HEALTH ASSOCIATION.

We have received the following notice from the Society of this important organization, and hope it will receive due attention from our readers:

BOSTON, AUGUST 10, 1882.

The American Public Health Association will hold its Tenth Annual Session at Indianapolis, Ind., commencing Tuesday, October 20, 1882.

Papers will be presented on the different action of disease in White and Black Races, The Removal of Excreta, Heredity, Sanitary Associations, Vaccination, Intermittent Fever in New England, Sanitary Organization, Cattle Disease, etc., etc., with Reports of Committees on the Prevention of Venereal Disease, Compulsory Vaccination, The Management of Epidemics, Statistics, Cattle Diseases, National Museum of Hygiene, Incorporation of the Association, and Necrology.

Terse, strong, practical papers on sanitary subjects are invited, and more time will be devoted to discussion than has been allotted at former meetings.

Papers offered to the Association become its exclusive property, and are copyrighted.

Gentlemen who propose to present papers, are respectfully requested to notify the Secretary at once of their intentions, and to

give the titles of their papers that they may be assigned a place in the programme.

Present members of the Association are especially urged to every effort to increase its membership. Names proposed for membership should be sent to the Secretary.

Two proposed Amendments to the Constitution come up for action at this session.

It is expected that Vol. III. of the transactions will be ready for distribution at or before the meeting.

Information in regard to transportation will be furnished by the Indianapolis Local Committee at an early date, and by a later bulletin from the Secretary, if required.

By order of the Executive Committee,

AZEL AMES, JR.,

Secretary.

ARTICLE VII.

THE TRI-STATE MEDICAL SOCIETY.

As was stated in a previous number of this journal, the above named society holds its eighth annual session, at Terre Haute, Ind., on the 26th, 27th, and 28th of September, 1882. The following statement sent us by the Secretary may be of interest to such as desire to attend the meeting:

PLEASE NOTICE.

1. The sessions will be held in DOWLING HALL.

2. Hotel rates for members at the Terre Haute House, $2.00, reduced from $3.00; at the National Hotel, $2.00, reduced from $2.50. Any other accommodations necessary will be arranged for by the Local Reception Committee.

3. Arrangements for special rates have been made with the railroads centering here and their connections, as follows; Vandalia Line, I. & St. L., C. & E.I., E. & T. H., L. & N., Ills. Central, W., St. L. & P., one and one-third fare for round trip. The P., C. & St. L., Cincinnati Southern and I. B. & W. give round trip excursion rates by application to local agents.

☞Members of the profession, desiring to take advantage of these arrangements will please apply to Dr. J. E. Link, Chairman of the Committee of Arrangements, who will furnish full particulars.

4. Members are requested to be present at the first session, as the regular business will begin without delay.

5. Each session will be called promptly.

6. Papers are limited by rule to twenty-five minutes.

7. Time for discussion will be given after each paper, or series of papers.

8. Authors, unavoidably absent, will send their papers to the Secretary during the first day of the meeting.

9. All physicians will, on their arrival, apply for tickets of membership issued by the Secretary.

10. Volunteer papers are solicited, and arrangements will be made for their presentation.

LOCAL COMMITTEE OF RECEPTION.—S. J. Young, J. D. Mitchell, L. J. Willien, W. H. Roberts, G. W. Crapo.

PELLETURINUM TANNICUM.

The alkaloid pelleturinum, lately extracted from the *cortex radicis granate*, is, according to Dr. H. Witt (St. Petersburg *Medical Weekly Journal*, April, 1882), the most certain of all our remedies for tapeworm. In five cases in which, for a number of years, all the usual remedies had proved themselves to be unsuccessful, about twenty-two grains of pelleturinum tannicum, followed by a tablespoonful of castor-oil, had the effect that the dead tapeworm appeared unbroken in the stool. The remedy is easily administered, as it is perfectly tasteless.—*Med. and Surg. Reporter, Phila.*

Foreign Correspondence.

ARTICLE VIII.

PARIS, JULY 22, 1882.

EDITORS MEDICAL JOURNAL AND EXAMINER:

Without pretending to give a complete account of any individual clinic here in Paris, I will endeavor to arrange a few items from my note-book, embracing general information, as well as particulars of clinics.

Foreign medical men are everywhere cordially received in Paris. All the hospitals and clinics are open to them free of charge, and on the presentation of professional cards special attention is invariably afforded. Even the histiological laboratories, with their advantages, are also at their service. If a stranger wishes to work in the histiological laboratory of the College of France, under Bauvier, he has only to present his card as physician, enter his name, and if all the tables are not occupied, he can begin work at once, provided he has with him his microscope. It is, however, absolutely essential to understand French. In the German and Austrian hospitals nearly every one speaks more or less English, but that is by no means the case in France. It must, however, be readily conceded that a person not understanding the language of the hospital is at a decided disadvantage.

One of the first places that attracts a medical man in Paris is the Hospital of Saltpetriere, the scene of the labors of Charcot. He finished, two weeks ago, his first course in the capacity of Professor of Nervous and Mental Diseases of the Faculty of Medicine. The clinic was given on Thursday and Sunday mornings, and lasted from half past nine to eleven o'clock; it was given in a large hall completely darkened, and lighted with gas.

Every possible convenience for screen projections and illustrations are provided, and dexterously manipulated by his numerous assistants. I had the pleasure of witnessing some of those results of pressure on the ovaries of which I had previously read, but never before seen illustrated with such marked results. I wish I could give to the readers of the JOURNAL some realization of the picture. One of the first patients presented was a young girl of charming appearance. The only visible sign of a departure from normal physiology was a persistent inward contraction of right foot. She was, however, wearing a ceinture which produced pressure in the region of the ovaries. The ceinture was removed, and immediately a violent fit of coughing was developed, which, even for the short time that it was exhibited, was positively painful to observe. The ceinture was re-applied, and the coughing ceased as by magic. Another patient was presented, with whom the removal of the ceinture was followed by the regular development of the various stages of epilepsy, exhibiting all the violence of agitation, frothing at the mouth, rapid, powerful muscular movements, followed by the most complete opisthotonus. The application of the ceinture cut short these paroxysms at any particular stage of their development with the most remarkable promptitude. Some half dozen patients were presented, illustrating in a similar way the same influence. In one case, when the removal of the ceinture was not followed immediately by an onset of the epileptic attack, the assistant gave a very slight but rapid tangential blow of the hand in the small of the back, and immediately the epileptic attack began, culminating in the cataleptic condition.

One case was exhibited of unusual interest, on account of its history. Becoming pregnant, it was found that the points on which pressure had to be exerted in order to relieve the attacks of epilepsy, gradually ascended as the pregnancy developed.

The ceintures which are used at the Saltpetriere are of various forms, in many respects similar to trusses. Although this particular branch of medicine bears no immediate relation to the branch to which I am giving special attention, as Messrs. E. H. Sargent & Co. authorized me to purchase for them anything which I should think of special use to the profession, an opportunity will

be afforded of seeing the latest modifications of these ceintures in Chicago in a short space of time.

On another occasion a series of hypnotic cases were presented. Your readers, I know, are acquainted with the facts, but I confess it was the first time I had ever seen them developed, and as I saw two or three other phenomena developed which I had not before seen in print, I deem it of interest to narrate them.

The wand by which the magician—for it seemed like magic—developed the hypnotic state, was the little percussing hammer used for the detection of the tendon reflex. Holding the hammer like a pen in his hand, and passing two or three times in different directions over the face of the subject, the hypnotic state was developed. All the patients who were thus acted upon were previously afflicted with rigidity of one or more of their limbs. Immediately the hypnotic state manifested itself, the most complete flaccidity of the various members occurred, except those that were rigid before the hypnotic condition. A change, however, from the flaccid condition of the various members to that of rigidity, was produced immediately on rubbing the muscles which it was desired to contract. This contraction was very readily removed by gentle friction applied to the opposing muscles. When, however, the same influence was brought to bear on the limbs in a state of contraction before the hypnotism, it failed completely.

On lifting the eyelids so as to allow light to enter the eye during the hypnotic condition, a condition of catalepsy was immediately produced. This could be provoked unilaterally or bilaterally, at the will of the operator. The patient was awakened from sleep by simply blowing in the face.

I saw M. Dumontparlier produce similar effects in his wards. He set me to look at one of his patients in the face, and in less than half a minute she fell into the most complete hypnotic state. He put a bandage over her eyes, and another patient was observed to be in the same hypnotic condition. To this latter patient he applied, with a bit of cotton attached to a stick, a small quantity of ether to the dorsal part of the wrist. The arm flew to the most complete extension like a shot from a cannon. The same was applied to the other arm with a similar result.

This condition was relieved by blowing over the hand. Then a little ether—the patient being still in the hypnotic condition—was applied to the umbilicus, and immediately the most complete opisthotonus was developed. This condition was immediately relieved by blowing over the toes with a bellows.

Going to the former patient, who still had the bandage over the eyes, she manifested signs of wakefulness. M. Dumontpar lier rubbed her eyes a little, and pressed on a point in the left temple on an imaginary line connecting the occiput with the point of the nose, and she became unable to utter her own name or to give the name of any object that was presented to her. I you will allow me to mix up matters a little, I would like to add that I saw a few days ago, in the wards of M. Fournier, a case of syphilitic affection of the brain, in which the peculiar expression of countenance which the young man developed in trying to utter his own name—which he was utterly unable to do—forcibly reminded me of the expression of countenance of the partially hypnotic girl under the influence of pressure in the temple. The syphilitic patient nodded assent when his name or his age was given, with an expression of countenance exactly similar to the expression of the partially hypnotic girl.

This is not, as I said above, an account of any one individual clinic, so I will conclude by appending Charcot's table of

TABETIC SYMPTOMS.

SPINAL.

Sensitive.—Lancinating pains; anæsthesia or hyperæsthesia (circumscribed); loss of the notion of position of limbs; sign of Romberg. *Muscular.*—Absence of reflex of knee; incoördination.

CEPHALIC.

Sensitive. — Lancinating pains; circumscribed anæsthesia or hyperæsthesia; gray atrophy of optic nerve; tinnitus aurium. *Muscular.*—Myosis spinal sign of Argyle Robertson; paresis of muscles of eye; diplopia; falling of the eyelids.

VISCERAL.

Disturbance of the functions of the stomach, intestines, retina, anus, bladder; disturbance of the bladder; spasm of the larynx.

ATROPHIC.

Muscular atrophy; osseous lesions, especially in the joints (these lesions were illustrated by a large number of cases and pathological specimens); lesions of the skin; tona.

R. TILLEY.

ARTICLE IX.

PARIS, July 31, 1882.

How different the surgical clinics in Paris are from those in Vienna—Professor Bilroth's clinic being taken as a sample of the latter. In Prof. Bilroth's clinic every assistant knows just what he has to do and it is done without noise or confusion, the operator seldom having to ask for anything. Carbolized water, about 2½ per cent., being in such abundance that the floor is often covered with it. In Paris the public clinics generally are marked by a great deal of confusion—exception being made to the clinic of Prof. Charcot. The larger eye clinics exhibit this confusion to perfection. The smaller eye clinics, however, are conducted with much greater order.

Electro-cautery is being used extensively here in various affections of the eye, I might almost say promiscuously. It is used in entropion, extropion, pannus, leucoma, ulcers of cornea, scleritis, anterior staphyloma, conical cornea, and detachment of the retina. It is exceedingly difficult, as every one knows, to ascertain the relative value to be attached to these operations in cases thus seen. The one advantage in many cases seems to be that it takes only a very little time to complete the operation, an advantage not always on the side of the patient. The operations on the lids, here in Paris, are not well done, and of all the thermo or electro-cautery operations it struck me that the operation for entropion of the lower lid was the most unsatisfactory; it leaves a most ugly wound for a long time after and the result must be very uncertain. I had the opportunity of demonstrating Dr. Hotz's operation for entropion in one of the best smaller clinics. The result was so satisfactory that on visiting the same clinic a week or so later I was shown two other cases in which the same operation had been

performed, and the *Chef du Clinique* expressed himself greatly pleased with the operation. The only objection, which as you will see is no objection at all, is that it takes quite a little time to accomplish it thoroughly. I have spoken with several oculists here in Europe about this operation and have been astonished how few people who had read the description had properly understood and appreciated the main points.

In detachment of the retina M. De Wecker is using electrocautery two rows of points in the lower cul-de-sac—so, : : : : : : : ; whilst M. Abadie is thrusting a needle into the eyeball, attaching it to a battery and applying the other pole to the forehead, expecting in this to effect electrolysis. If this operation effects anything it certainly will not be by electrolysis; it would be absolutely impossible with a battery such as was used and the poles so far apart to effect such an operation.

Pilocarpine for detachment seems to have taken a back seat. I have seen pilocarpine, however, administered subcutaneously, to dispensary patients, and the patient sent into the waiting room to spit and sweat until he was tired and then walk home in the rain. I do not say this to recommend the practice, and I must say, in justice to the majority of the clinics, that I only saw it in one of the largest clinics. A good deal more attention, here in Paris, is given to the association of constitutional affections in affections of the eye than in Vienna. A good deal more attention is paid here to the field of vision. This is probably due to the researches of Charcot.

M. Paen is spoken of as one of the most successful surgeons in Paris. Consequently I availed myself of the opportunity of witnessing two of his ovariotomy operations. It is, of course, not necessary to describe the operation, but I will briefly pass in review such points as seemed to me noteworthy.

The chair or table is portable. A similar one he always takes with him for his operations in the country. Anæsthesia being produced, the part of the table at the foot is removed and two wire troughs are attached for the reception of the legs. The hands and feet are fastened to the table. The cover of the table being removable and divided down the middle, the patient is removed to bed with great ease. The tongue is drawn forward with a pair

of forceps from the commencement of the operation. No carbolic acid is used. In place of it a solution of the peroxide of hydrogen in water is used as a spray. The apparatus for the spray is placed at about four feet from the patient, and the peroxide of hydrogen solution is supposed to contain six volumes of oxygen to one of water. His special direction is that this solution should be absolutely neutral. It is difficult to see how this can operate as an antiseptic, but I should observe that the same preparation is being used in several eye clinics.

The preliminaries of shaving, washing and covering the abdomen being accomplished, a long bold incision is made and an immediate and abundant use of hæmostatic forceps is exhibited. In the two operations I saw there was scarcely enough blood spilt to tinge the pail of water. As soon as the abdomen is open the wound is carefully protected by his assistants with clean soft napkins. He uses sponges, of course, but uses a good many more *soft clean napkins*. One of the assistant sisters always stood by a pile of about two dozen and ready to hand them to him at a word. A napkin, very soft, was even put into the abdomen instead of the sponge. No napkin was used twice for anything. There was nothing particularly noteworthy about the tying the pedicle. After the section, however, even part of the abdominal stump was taken up by the hæmostatic forceps previous to the final ligature. The ligatures were of silver. In stitching the abdomen the stitch was always taken from the inside. There was nothing peculiar or superior about the bandaging.

I paid a visit to the manufacturer of the peroxide of hydrogen in order to inquire something about the condition of acidity on which M. Paen seemed to place so much importance. He assured me that it was absolutely impossible to keep peroxide of hydrogen unless the solution was slightly acid. The difficulty being that on the slightest elevation of temperature the corks would fly and the bottles burst. I have since had some experience of that, for I bought of him a small quantity and requested of him to have the cork tied in. It was not tied in, however, and the consequence was my peroxide of hydrogen was spilt. The manufacturer here makes it at what he calls sixteen volumes; or

one volume of the solution, if the quantity of peroxide of hydrogen contained in it were dissolved, would yield sixteen volumes or equal parts of oxygen. He acknowledged that it was not certain, but he would guarantee it to contain twelve volumes.

Professor Hayem, of Hôpital San Antoine, has been using it for some time past for the preservation of diabetic urine, which he makes use of as a diluting fluid for counting the blood corpuscles.

A system of what is called "Gavage" is being practiced here by M. Dujardin Beaumetz. This is practiced principally for consumptive patients who have no appetite. It consists in passing food into the stomach by means of a short œsophageal tube. The food consists of a thick fluid composed of meat specially prepared, dried and stirred up with milk. The preparation of the meat consists in cutting away as much as possible of the cellular tissue, warming it in water hot enough to cause the fat to rise to the top and then drying it at a temperature of 45 centigrade. The patients are said to gain weight and improve greatly.

A patient of considerable interest of late in Paris is a young woman at Hôpital Beaugon. Until lately she had been in a condition of absolute unconsciousness extending over a period of seventy-four days. During this period she gave birth to a four months' fœtus without any apparent effort and without any modification of the lethargic condition. She was first found in the street unconscious. At the suggestion of Prof. Charcot, cold douches were administered and restored consciousness. Electricity and various other expedients had previously been tried without effect.

R. TILLEY.

THE ideas of suicide originate in the circonvolutions of the brain, resulting from lesions in the frontal and parietal convolutions. So says Dr. Auguste Voisin.

Domestic Correspondence.

ARTICLE X.

A NEW WRINKLE IN HYPODERMIC MEDICATION.

ROCKFORD, ILL., AUG. 6, 1882.

MESSRS EDITORS:—A somewhat troublesome abscess occurring to a patient recently under my care, with cervico-brachial neuralgia, has suggested a simple measure whereby this common and pestiferous result may be obviated.

Of however trifling import these abscesses may seem, instances are not wanting, where, in dilapidated or cachectic subjects, erysipelas, pyæmia, gangrene, or extensive sloughing have been their outcome. No "trifle" should ever be disregarded, in aught pertaining to the welfare of a patient.

The cause of these abscesses is doubtless always due to the introduction of some foreign body, however minute, along with the injection. In a word, the cause (exciting) is purely mechanical. The remedy is necessarily the same, and consists of a device to secure complete filtration of the injecta, destroying also bacteria and germs.

Placing a very small pledget of carbolized absorbent cotton into the upper cap of the syringe, which is readily done by unscrewing it from the tube, the liquid is introduced, the cap screwed on, and the air expelled by pointing it upward and slowly pushing the piston forward till the last bubble escapes. The needle may now be attached, and the injection made. The minutest particle of foreign material is thus inextricably entangled in the meshes of this improvised sieve, which in no case will interfere with the thread of the screw, and cannot, from its textile structure, clog or plug the caliber of the needle.

As a crucial test, the microscope failed to discover any shreds, fibers, granules or what not, after trying parts of several drops thus subjected to the filter.

It has occurred to me, as a sort of postulate, that wads of compressed absorbent cotton will be found far better than the inconvenient tablets lately used for the hypodermic syringe. The cotton may be made to absorb the solution, dried, and then compressed and packed in tubes like the tablets. A few minims of water, without special care in selection, may be drawn into the syringe, the upper cap unscrewed as above, the antiseptic absorbent cotton medicated wad filter introduced, the cap replaced and the gun fired. These tablets harden and become almost insoluble, even in hot water; with the wads this would be obviated, of course.

Very respectfully,

E. C. HUSE, M.D.

ARTICLE XI.

ELGIN, ILL., AUGUST 4, 1882.

EDITORS CHICAGO MEDICAL JOURNAL AND EXAMINER:

Is yellow fever contagious? My experience, extending through four epidemics of yellow fever, leads me to the belief that it is a non-contagious disease. In 1853 I had the sickness, and practiced through that epidemic in Lavaca, Texas. Out of seven physicians there, five died with the disease. Many ran away from the place, as is the case in all epidemics of like character. I attended a number of the refugees who only went out six miles, and camped on a bayou where there was a little settlement. No one took the disease in the settlement, notwithstanding they helped nurse the sick. The next season, 1854, the fever again appeared. Again in 1863 and 1867, the two towns of Lavaca and Indianola suffered greatly with the sickness. During every one of these epidemics many fled. I never knew of a case of fever resulting from exposure to it, nor from infected clothing *fomites*. I think the only method of finding out if the sickness be contagious is for some one to take it from some such exposure, but

with all my experience, I never knew such a case. I have witnessed sporadic cases of it in New Orleans and in other places up to 1878; treated it on shipboard; held post-mortem examinations, and had friends and others present. I have had bedclothing washed and preserved on which the sick and dying had lain, the bedding besmeared with black vomit; never a case occurring from any such exposure within my knowledge. I do not think there are any well authenticated cases of the kind.

I do not believe that in an infected place, where the disease is prevailing as an epidemic, it can be proven that one person takes it from another. I have always observed that in the beginning of this sickness in a place, as an epidemic, the sickness appears suddenly and simultaneously in different and remote spots, showing the disease to have an atmospheric origin. My experience also teaches me that its cause is a domestic one, not depending on any exotic principle. I have had the singular fortune to meet with and treat the first cases in no less than three epidemics, and under such circumstances as to preclude the possibility of any foreign origin. H. ROSENCRANS, M.D.

NATIONAL CONFERENCE OF CHARITIES AND CORRECTIONS.

The ninth annual session of the above organization was held in Madison, Wisconsin, commencing August 7, 1882, and continued five days. The attendance was large, and a wide range of topics relating to charitable and penal institutions were discussed. We are glad to notice that some, at least, out of the many who are devoting attention to these important matters, are beginning to expose the folly of investing so many millions of dollars in imposing public edifices for the protection or correction of classes who would be far better served, and the interests of the people also better protected, by less magnificence in building, and more attention to the moral and physical condition of those placed under public charge. D.

Editorial.

COOK COUNTY HOSPITAL.

This institution has just undergone one of those periodical revolutions in its affairs that all institutions under municipal, or more properly, political control, are subject to. For some time differences have been accumulating between the regular medical staff and the County Commissioners, as the governing body. At the meeting of the Board of Commissioners, on the 3d inst., the whole medical and surgical staff was declared vacant, and a new staff was appointed, without the slightest regard for the interests of the three or four medical colleges that have been built up immediately around the hospital, and depending upon it for the important department of clinical instruction. We are assured that the present revolution will not stop with these new appointments, but will soon culminate in putting the hospital under the charge of one medical man as chief, or superintendent, with a salary, and an *advisory board*. This would add another salaried office, with possible *perquisites*, to the number in the county to be scrambled for at every election, and, generally, to be occupied by the doctor who could bring the greatest political influence to the support of the dominant political party, whether he had any medical or surgical reputation or not. Having no personal interest in the present revolution, and no reliable knowledge concerning the causes that led to it, we are not prepared either to defend or censure any one of the parties. But we are prepared to say that a large proportion of the physicians and surgeons so summarily dismissed were as eminent, skillful, and faithful in the discharge of their duties as can be found in the profession anywhere; and that the system of having our public medical charities attended

largely by professional men who are willing to *give* their services to the sick for the privilege of giving clinical instruction to those acquiring medical knowledge, is the least liable to abuse or neglect, while the system of *superintendency* under one chief medical officer, with a salary, and directly dependent for his position on political influence and party success, is the most liable to fraud, corruption, and incompetency of any that has ever been tried. And yet we shall not be surprised if the present Board of County Commissioners put it in operation within the next thirty days.

ANEURISMA AORTÆ, COMBINED WITH STENOSIS OF THE TRACHEA AND PARALYSIS OF THE RECURRENT NERVE.

The patient, forty years of age, is a stout man; has had no syphilis, and took sick about seven months ago. There appeared a severe pain under the sternum, the voice became hoarse, and a continued cough troubled him; the breathing was difficult; no pains in the larynx, and no fever. When entering the hospital, the patient was anæmic, and a cyanotic discoloration of the cheeks and mucous membrane was apparent. Dyspnœa in inspiration; temperature subnormal. The peripheral arteries are atheromatous; the larynx projects widely; pulse of the carotids slow; the jugular veins dilated; pressure on the larynx causes no pain. The voice is hoarse; nearly aphonic; the deglutition is not difficult. Thorax long and flat; supra-clavicular grooves deepened; suspiration difficult and hard; respiration twenty per minute. In the anterior part of the thorax is visible a large prominence. A portion between the manubrium, clavicula, right mamillar line and the cartilage of the second rib is somewhat elevated; percussion dull. There is also pulsation coincident with that of the heart. Diaphragm quite low; over the heart dull sounds, also in the fossa pigularis. The patient died from asphyxia. The autopsy showed the aorta enlarged, and there was a sac three cmm. behind the heart, compressing the left bronchus. The recurrent nerve had grown into the aneurism, and the bronchial glands were hardly visible. The trachea was compressed shortly above the bifurcation.—*Med. Chir. Centr. Bl.*

BOOKS AND PAMPHLETS RECEIVED.

BOOKS.

The Medical Digest, or Busy Practitioner's Vade Mecum. Neal. Leger, Smith & Co., London.

Insanity and Imbecility. A Rational Materialistic Definition of, with the Medical Jurisprudence of Legal Criminality. Howard. Montreal: Dawson Bros.

Diseases of the Rectum and Anus. Kelsey. Wm. Wood & Co., Med. Lib. 1882. W. T. Keener.

Homœopathy; What is It? Palmer. Davis, Detroit.

Percussion Outlines. Cutler and Garland. Boston: Houghton, Mifflin & Co.

Manual of Diseases of the Skin. Bulkley. New York: Putnam's Sons. W. T. Keener.

Materia Medica and Therapeutics. Vol. II. Inorganic Substances. Phillips and Johnson. New York: Wm. Wood & Co., Med. Lib., May, 1882. W. T. Keener.

Transactions American Gynæcological Society, 1881. Vol. VI. Philadelphia: Lea's Son & Co. W. T. Keener.

Tenth Michigan Registration Report, Lansing, Mich.

Practical Medical Anatomy. Ranney. Wm. Wood & Co.

The Experimental Method in Medical Science. Dalton. New York: Putnam's Sons.

Labor Among Primitive Peoples. Engleman. St. Louis: Chambers & Co. W. T. Keener.

Mental Pathology and Therapeutics. Grusinger. Translated by Robertson and Rutherford, Edinburgh. New York: Wm. Wood & Co. W. T. Keener.

Contributions to Practical Gynæcology. Donaldson. W. T. Keener.

Clinical Lectures on Diseases of the Urinary Organs. Thompson. W. T. Keener.

PAMPHLETS.

Uterine Anteversions and Anteflexions. Wing.

Trance, Muscle Reading and Allied Nervous Phenomena. Beard.

A Contribution to the Subject of Nerve-Stretching. Morton.

Antepartum Hour-glass Contraction of the Uterus. Smith.

Health in the Common Schools. Second Annual Report New York Board of Health.

Treatment of Uterine Fibroids by Iodine. Radcliffe.

Expert Testimony in the Whitaker Case. Piper.

An Ephemeris of Materia Medica, Pharmacy, etc. Squibb.

The Practice of Gynæcology in Ancient Times. Jenks. W. T. Keener.

A Further Contribution to the Treatment of Pulmonary Cavities. Pepper.

Tonsillotomy and its Complication by Hæmorrhage. Powell.

Two Cases of Hemiachromatopsia. Hayes.

The Condition of the Eyes in Two Cases of Fatal Anæmia. Bettman.

The Columbus Medical College Embroglio. Baldwin.

The Presence of the Micrococcus in the Blood of Malignant Measles. Keating. Trow & Co., N. Y.

Proceedings of the Connecticut State Medical Society, 1882. Blakiston, Son & Co.

LARRABEE says: "Quackery consists in this, that while with the regular scientific physician all things are held in common, all truths are shared, quacks, by conspicuous words and advertisements, lead the people to believe that they possess ideas not known to the regular profession, and this alone is their hold upon the people whereby they gain a livelihood. When by chance the community looks in on the regular profession, they are surprised to find that the quack has nothing new, nothing that is not borrowed from legitimate medicine." In short, if all would be content to be known simply as doctor, there would be an end to schism. On no other ground can the honest regular practitioner meet in council the disciples of the healing art. This platform is as broad as accumulated knowledge and experience can make it. They alone are responsible for results who refuse to adopt and live by it.—*Detroit Lancet.*

Original Translations.

EXTIRPATION OF THE LARYNX.

Czerny proved the possibility of extirpation of the larynx, on animals, and then Billroth executed the operation on living persons. Since that time extirpation of the larynx has been practiced about forty times, with eighteen successful results. The most severe accident in this operation, the entrance of blood into the bronchial tubes, has been avoided by, 1, lowering the head of the patient; 2, performing tracheotomy a certain time before laryngotomy. The lowering of the head is objectionable, because the parts to be operated upon are not in full view; but the obturation of the the trachea after tracheotomy is the best means to avoid an escape of blood into the bronchial tubes. Trendelenburg's canula with air-sac is doubtless the best apparatus invented for this purpose. The incision is made in the median line, from a little above the hyoid bone down to the first cartilage of the trachea. The skin and cellular tissue are divided, and the sterno-hyoids are entered without difficulty on the thyroid cartilage; then the thyroid bursa is opened. The flow of blood is insignificant, and only the crico-thyroid artery has to be ligated. Then the lateral parts of the larynx are dissected with a blunt instrument, Bottini using the thermo-cautery. The thyro-hyoid and sterno-hyoid muscles are divided on their point of insertion on the cartilage. The deeper parts are separated, first the lateral lobe of the thyroid body (corpus), and the superior thyroid artery ligated. The constrictors of the pharynx are dissected from their points of insertion, and the larynx thus liberated from the lateral and posterior parts. The larynx is then seized with a tenaculum inserted into the thyroid cartilage, the organ thrown forward and

the hyo-thyroid ligament dissected. The upper laryngeal nerve and artery are divided, the latter ligated. The front part of the larynx is then isolated by cutting the inferior arteries and nerves, and at last the larynx is separated from the trachea by dissection. Some operators prefer to separate the larynx from the trachea immediately after the larynx has been isolated from the lateral parts, and to dissect from below upward, dissecting the thyro-hyoid ligament last. In cases where the cancerous masses have entered upon the pharynx, œsophagus, trachea and epiglottis, the surgeon requires great discretion. To prevent the rapid retraction of the parts surrounding the trachea, Maas and Wegner divided the cricoid muscle with Liston's pincette, leaving a space for the insertion of the artificial larynx. The operation being finished, a few sutures are applied, but primary reunion is not sought for. A large soft canula, the anterior part of which is surrounded by antiseptic gauze, is introduced from the wound into the stomach, the superior part of the trachea is closed by Trendelenburg's apparatus, which is provided with an air-sac. The wound is treated antiseptically, injections being made into and through the mouth, especially in cases where the epiglottis or tongue had been elevated in the course of the operation. Nourishment (wine, beef-tea, milk) is given through the anterior aperture of the canula. Deglutition by the mouth is only possible after the wound is covered with healthy granulations, which may be perfected after a short time. The tongue acts then, even in cases where the epiglottis had to be elevated, as an obstructor, and it prevents the food falling into the trachea. Some operations have been followed by surprising success, and the wound healed without fever or any other accident. The principal causes of death have been shock and pneumonia. The main points in the operation are, 1, preliminary tracheotomy; 2, placing of the tampon; 3, insertion of the œsophageal canula; 4, antiseptic treatment. After the wound has been healed, it is necessary to introduce an artificial larynx, Gussenbauer's newly invented instrument being the most perfect. The latter is composed of a tracheal canula, a laryngeal canula containing the vocal apparatus, and a valve forcing the air through the laryngeal

canula in expiration. The amplitude of vibrations of the metallic lamella is increased by the passage of the sound into the nasal fossæ.—*Archives Général de Médecine.*

CANCER OF THE ILEUM.

Primitive cancer of the intestines is much less frequent than cancer of the stomach; the most frequently affected intestines are the rectum, the cœcum and the ileum. Many authors consider the cancer of the small intestines, and especially that of the duodenum, as a secondary form. Dr. De Castel made a good many observations on this subject, and he points to the fact that most cancers develop on the termination of the different canals in the human economy. The portion of the ileum next to the ileo-cœcal valve is often the seat of epithelioma; this part is also essentially the seat of cancer of the ileum, and there are cases where there exists a circumscribed cancer of the valve. The most usual alteration is found above the valve, and then the glands are transformed to white hard masses, with some colloid corpuscles. The induration of the glands impedes the action of this organ, and hence the continued constipation. There are further voluminous ramifications of the mucous membrane which will diminish the cavity of the ileum, and there will be at last a complete obstruction of the canal, so that it is often impossible to inject any water through the canal in autopsy. The cancer will be confined either to the termination of the ileum, or it will attack the neighboring parts, especially the cœcum, which is transformed to a rigid canal devoid of any elasticity. In the latter cases it is difficult to distinguish the origin of the malignant growth, whether it was first in the ileum or in the cœcum, but Dr. De Castel thinks that in the most cases which he dissected the growth started from the ileo-cœcal valve. By the narrowing of the ileum great masses of fecal matter are accumulated, and they are rejected by the stomach. The covering peritoneum is also mostly degenerated, and the pericœcal cellular tissue forms adhesions with the canal and the fossa. The diagnosis of the incipient cancer is very difficult, the symptoms being of a dyspeptic character at

first, with general malaise, but later continued constipation and vomiting of fecal matter will show the character of the disease, and the presence of a tumor in the iliac region will make the diagnosis correct. The pain is but a secondary symptom, and it is often entirely wanting. The seat of the pain is either in the stomach (gastralgia), in the epigastrium, or around the navel. There are sometimes colic-like pains, which result from violent contractions of the intestine to overcome the narrowed canal. The vomiting is often observed in cases where the cœcum is not much involved. When the vomiting is fecal, it is tinged sometimes with blood resulting from hæmorrhage. The invasion of the peritoneum modifies the character of the disease, and there is either a tumor formed by the intestines adherent one to another, or there is a swelling of the abdomen which prevents the auscultation of the original tumor; in general the peritoneum is at last involved with the cancerous masses. If the glands are affected, the secondary cancer will attain a much larger size than that of the cœcum. The cancerous cachexia is often retarded. The course of the disease is short; from two months to one year. The treatment is confined to physics. Surgical treatment has never been tried in these cases, but it might become necessary in those cases which resemble strangulated hernia.—*Archives Général de Médecine.*

THAT dogs appreciate medical treatment is a fact that has been often attested. A story has lately been published illustrating this. One afternoon a little black-and-tan dog was found moaning piteously at the entrance of a hospital in East Concord street, Boston. The animal's apparent suffering attracted the attention of Dr. C. E. Hastings, one of the faculty, who made an examination, which revealed a bad compound fracture of the leg. The doctor set the bone, and gave the little sufferer such other treatment as the case required.—*Journal of Comparative Medicine and Surgery.*

Abstracts.

INHALATION OF MEDICATED VAPORS IN DISEASES OF THE RESPIRATORY ORGANS.—Guillemin (*Archives Méd. Belges—Lond. Record*) summarizes his views as follows:

1. The affections of the mucous membrane of the respiratory passages may in certain cases be advantageously treated by inhalations of medicated vapors.

2. In the first stage of acute inflammation of this mucous membrane, pain, cough, and painful sensations, which are the consequence of irritation and dryness, are rapidly calmed by inhalations of warm, moist, and aromatic vapors.

3. The calming action is still more decided if to the liquid, which serves for inhalation, there be added a small quantity of certain volatile calmative substances such as ether, distilled cherry-laurel water, or conium.

4. Frequently renewed inhalations of essence of turpentine, when they are administered at the commencement of the first period of inflammation, may arrest its progress.

5. The vapor of iodine exercises an irritant action on the mucous membrane of the air-passages. It induces efforts of coughing, and augments the secretion of the mucus of the air-passages. This irritating action may be utilized: (*a.*) To diminish the swelling of the mucous membrane by causing the inflammation to pass from the first to the second stage; this indication is present especially in cases where the inflammation occupies the small bronchi; the swelling of the mucous membrane is sufficient to give rise to fear of respiratory insufficiency. (*b.*) To diminish the viscosity of the products of morbid secretion by their admixture with the mucus, of which the vapors increase the formation.

(*c.*) To induce efforts to cough, and to disembarrass the air-passages from the products which are there accumulated.

6. It is not only by its irritating properties that the vapor of iodine modifies the mucous membrane of the air-passages. Iodine in reality possesses the property of stopping purulent secretion, and, on the other hand, it arrests and prevents putrescence. Thus, when the mucous membrane of the air-passages yields a purulent secretion, resulting either from an acute inflammation in the third stage, or from a chronic inflammation, the inhalations of iodine will determine by degrees the quantity of pus, and finish in certain cases by entirely changing the nature of the secretion, which becomes completely mucous.

7. Although the essence of turpentine, in the fluid condition, is a sufficiently powerful irritant for the tissues with which it is placed in contact, inhalation of this essence is easily supported by the mucous membrane of the air-passages. It only brings on very moderate irritation, and very rarely provokes fits of coughing.

8. When the mucous membrane is affected, and yields a product of secretion, these vapors have the effect of diminishing the quantity and augmenting the consistence of this.

9. If the product of secretion be purulent, the inhalation of essence of turpentine, continued during a sufficiently long time, progressively diminishing the quantity of pus, may, in certain cases, completely stop the secretion. The inhalations are indicated in all affections of the larynx, of the trachea, and of the bronchi, when accompanied by a very copious muco-purulent secretion without viscosities. On the other hand, the use of them must be avoided whenever expectoration is difficult, in consequence of the too great viscosity of the products of secretion.

10. In cases when these products are at the same time very copious and very viscous, it is possible, by alternate inhalations of vapors of iodine and vapors of turpentine, to rapidly diminish the quantity of secretion without increasing its viscosity. The inhalation of iodine should always be used in the first instance.

11. Inhalation of essence of turpentine is indicated in hæmoptysis, and is very successful in cases of hæmoptysis of average intensity.—*Detroit Lancet.*

INSANITY AND DIVORCE.—Some time ago a commission was appointed in Paris to investigate the question of Divorce, and determine what circumstances should in future be accepted as valid reasons for the dissolution of the marriage tie. MM. Charcot, Blanche and Legrand du Saulle have recently appeared before this commission, and testified that, with some reservations, insanity should not hold in law as a plea for divorce. According to the *British Medical Journal*, a writer in the *Gazette Hebdomadaire* warmly endorses the opinion of these eminent men, and in support of it advances the following reasons:

1st. No *disease* occurring after marriage, not even impotence, justifies divorce; insanity being due to a diseased condition of the nervous system, can therefore no more justify divorce than any other form of disease. The insane suffer in their moral and intellectual, as well as their physical health, and consequently deserve even greater consideration and care from their friends than those afflicted with ordinary ailments. In many cases, it is true, strict precautions must be taken to guard against the effects of mental loss of balance, but these do not necessitate either divorce or separation.

2d. *Chronic Insanity*, although often incurable, is not necessarily so. It would be both cruel and unjust to make it legally possible for a married man to return to his home after an unexpected recovery from chronic insanity to find his wife divorced from him and wedded to some other man. The form of dementia known in France as *Folie Ciaculaire* often yields such surprises. M. Blanche cites one case of this kind which, after sixteen years recovery eventually took place. *General paralysis* is admittedly incurable; yet such long and complete remissions do sometimes occur as to deceive even the most experienced practioners, the disease seems permanently arrested, and the patient leaves the asylum and returns to his family. With regard to these hopeless cases which are manifestly passing from bad to worse, Charcot maintains that the plain duty of the family is to redouble every possible attention, and wait patiently for the inevitable end, rather than seek for relief by divorce. *Epilepsy*, though generaly continuous, and a fruitful cause of insanity, is nevertheless sometimes limited to two or three attacks, then dis-

appears never to return. According to Foville, such epilepsies occur chiefly in the young, and are most frequently connected with the eruption of the wisdom teeth. Epilepsy is sometimes caused by the irritation of intestinal worms; the case of a librarian is cited where epileptic attacks ceased after the expulsion of a tænia, and did not return during the remaining fifteen years of his life. Chronic insanity should not therefore be admitted as a reason for divorce.

3d. It is by no means uncommon to meet with persons sufficently wanting in the moral sense to speculate by marriage on the diseased condition of their fellow creatures. Those affections which are slow in presenting their true character, but are not unfrequently recognizable in their early stages, such as phthisis and insanity, are particularly adapted to this kind of calculation. The prospect of divorce would be yet another encouragement, and so much the more tempting as regards dementia, that it would be more easy to accomplish an act of spoliation in the case of a person of weak intellect after marriage.— *Canada Med. Rec.*, April.

COOL AIR, ETC., IN MEASLES AND SCARLET FEVER.

Many children die or recuperate badly in measles and scarlet fever from want of fresh air. The same obtains in other affections, also, but proportionately perhaps oftener in these two of the major exanthemata.

The people imagine heat indispensable, and they dread draughts. Physicians advise a warm atmosphere, sometimes to favor eruption on the surface, to protect the air passages in measles and the kidneys in scarlet fever, and the result is often bad air for respiration. Equable heat to the body is necessary, but should be maintained by the clothing, or artificially, in the bed, and not by raising too high the temperature of the room. Better have it rather low than too high, provided the body be kept warm.

Hot air is not generally necessary for the bronchial affection in measles. I have seen a case do well in a room that froze water at

night, and have come to think lately that a somewhat cool room is best always in measles and scarlet fever, whether sthenic or asthenic. Not over 60° Fahrenheit in winter is better, and as cool as possible in summer, with very free ventilation.

In scarlet fever especially, cool fresh air is essential to promote active interchange of the normal gases in the lungs, and elimination through them, also, of some of the poison. It relieves restlessness, and is sedative, because grateful, to the patient. It is anti-pyretic somewhat from mere presence in the nares and throat; and nothing is so decided a vaso-motor stimulus as cool, fresh air when supplied for respiration in place of the hot and impure. It gives firmness and efficiency to the whole circulatory apparatus.

Efficient capillary and venous circulation favors secretion and excretion, and relieves internal congestions, in scarlet fever necessary in the glomerular and intertubular capillaries of the kidneys, and the automatic nervous ganglia of the body and brain.

In both these affections the stomach and bowels should have attention at first; patients are usually taken in full habit, the temperature rises, the secretions are checked, and the bowels should be moved at once. Sometimes they have moved sufficiently, but generally not. Solid food should then be withheld till the eruption is over. Little more than small drinks of water should be given in sthenic cases for the first two or three days.

Medicines are rarely necessary in ordinary uncomplicated measles, except to please friends.

In scarlet fever, where the temperature is greater, I give vegetable acids, diluted with water, freely for the first few days, or whenever there is thirst, and as long as they agree with the stomach and bowels. Citric acid is good in the form of lemonade, without sugar. I prescribe for a child four or five years old:

℞ Acidi acetici diluti..... ℥ ss.
Aquæ ad..... ℥ iv.
Misce et fiat Mistura.
Sig. Teaspoonful in water every hour, if awake.

It proves, in a degree, diuretic, diaphoretic, antipyretic, and sedative, and promotes elimination from the alimentary mucous surface. It increases destructive metamorphosis, especially adi-

pose, so desirable in the fleshy. This, with its stimulus to elimination, tends to lower heat of body; and renders it, to a certain extent, curative, as well as an agreeable drink. It is a sedative largely from allaying the thirst.

Mineral acids do none of those things so well, and are not so appropriate during the stage of eruption.

Digitalis is beneficial in venous distension and weak cardiac contraction.

Quinine is essential in malarial complication, and generally useful in high temperature and extreme septicæmia, but need not be resorted to at first, and rarely at all in scarlet fever.

The cold bath is not generally without some risk from shock or imperfect reaction; but extreme temperature may be lowered somewhat by cold to the head and palms of the hands, and occasional quick sponging with cold water, followed by friction.

We close with the end of the eruptive stage; for the acute tubal nephritis, median otitis and lymphadenitis, if they happen to follow, form new considerations, and are the principal results, besides death, we try to prevent.—*Thos. N. Reynolds, M. D., in Trans. Mich. Med. Soc. and So. Prac.*

QUININE IN CHOLERA INFANTUM.

Called to see a patient *at night*, along with the means already advised, you will now make an important addition to your treatment. We usually, unless the case is very urgent, postpone the administration of the grand remedy, quinine, until the late hours of night. Then the violent excitement and commotion of the exacerbations have passed. The stomach is then not so irritable. Quinine, a *sedative and narcotic*, is assisted in its action by the physiological tendency of the nervous system to repose in the night season, and you have ample time to exhibit enough of it in order to prevent the threatened exacerbations of the next day. I am sure that the remedy is better borne, and produces its salutary effects in the most perfect manner, when exhibited in the late hours of night. At midnight, then, we can commence its use. To an infant of six months of age and under, we give a

grain of sulphate of quinine with a few grains of white sugar, diffused in a teaspoonful of cold water. To a child of twelve months, we give two grains of quinine, and to one of eighteen months, three grains. If the dose is immediately rejected, we repeat it over and over again every half hour. After a few repetitions enough will be absorbed by the mucous membrane of the mouth and stomach, or by the former alone, if it is not even swallowed, to bring the little patient fully under its influence. If the first dose is, however, entirely retained, we allow the patient to rest for three or four hours. We then repeat the dose, and continue to repeat it until the thermometer in the axilla and the finger on the pulse indicate that rapid sedation is ensuing. In the large majority of cases these effects will follow from the administration of the sulphate. The pulse will become slower and less active and bounding; the head will become cooler; and the extremities, if previously below the normal temperature, will become warmer. Not only this, but the vomiting will become less frequent, or will often entirely cease. After the first dose of quinine has been absorbed, the bowels will become more quiet, and the renal secretion more copious. The little sufferer will become tranquil, and fall asleep, sometimes for hours without awaking; but it can be easily aroused if necessary. The narcotism produced by quinine, in this respect, is unlike the stupor produced by opium; and, besides this, instead of having a tendency to produce congestion of the brain, like opium, it has, beyond all other remedies, the power of removing an excess of blood from the cerebral vessels. In five or six hours the administration of quinine has begun, in the large proportion of cases, seen early in their course, the fever will have disappeared. When this occurs, cease medication for the day. On the next afternoon or night a slighter exacerbation will often make its appearance, and this may recur for two or three nighes thereafter. In this same case, repeat the quinine in similar or diminished doses, giving it more freely in direct proportion to the violence of the fever. At the same time we continue the calomel, or employ blue mass, until the presence of pure, healthy bile in the dejections is perfectly evident. Now that the fever has vanished, you may associate opium in minute doses with the mercurials. If blue mass is given, have it tritur-

ated in a teaspoonful of simple syrup, and add the laudanum to it.—*Otis F. Manson, M. D., in Trans. Virginia Med. Society and Southern Practitioner.*

IN studying the Geographical and Climatic relations of Pneumonia Dr. E. Sanders has summarized the following conclusions. His studies were based upon statistics obtained from many towns and cities in the United States and Europe:

"1st. The relations of pneumonia to altitude are definite and marked; with increase in elevation above the level of the sea, there is a steady diminution in the death-rate of pneumonia. To this rule some exceptions exist, but in the large majority of instances the relation holds good.

2d. The mean annual rainfall of a place bears no positive relation to pneumonia; in some instances a large mortality from the disease coincides with a large precipitation of rain, in others with a small precipitation, while in many others the contrary conditions are found to prevail.

3d. The higher the death-rate of a place from all causes, the greater the mortality from pneumonia. This rule is almost, if not actually, absolute.

4th. The larger the actual population of a locality, the greater its relative death-rate from pneumonia; the explanation for this being probably found in the following: Density of population bears an undoubted relation to the pneumonia rate, increase in the former being followed by, or going hand in hand with, increase in the latter.

5th. There is a direct, positive and unequivocal relation between the mean annual temperature of a place and its death-rate from pneumonia; the rule being that a high mortality from the disease coincides with a high mean temperature. Exceptions exist, but being unusual and rather rare, their existence can hardly be considered to invalidate this rule.

6th. Proximity to large bodies of water, such as lakes, inland seas, or the ocean, exerts no appreciable influence on the pneumonia rate.

7th. For North America, pneumonia increases in frequency as we pass from east to west; for Europe as we advance from west to east, the rate of increase being nearly twice as great in the case of the latter as in that of the former.

8th. Pneumonia, all other things being equal, increases in frequency the further we advance from the polar regions towards the tropics; this, however, only up to a certain parallel, beyond which it seems to become less and less commonly met with, until at or near the equator, when it apparently disappears. As far as the latter part of this statement is concerned, such would seem to be the truth, judging by what few facts are at hand. Statistics for the equatorial regions are rare and, even then, unreliable; hence I have purposely omited to present them. So few, vague and indefinite are they as to be almost valueless, allowing only of problematic deductions."—*American Journal of Medical Sciences*, July, 1882.

APHORISMS IN OPHTHALMOLOGY.—At the annual meeting of the Medico-Chirurgical Society of Maryland, Dr. J. J. Chisolm treated of eserine, which has taken the place of all other remedies in corneal affections; pilocarpin, which had produced the best results in the author's hands, internally used, of all the articles in the pharmacopeia in acute inflammations of the eyeball; salicylate of sodium, of the greatest value in iritic and scleral inflammations, whether specific or rheumatic; homatropin, to be preferred to atropia and duboisia on account of its transient mydriatic effect.

He also laid down the following aphorisms for general practitioners practicing ophthalmology:

1. Do not blister. 2. Do not use nitrate of silver. 3. Do not use acetate of lead. 4. Treat affections of the mucous surface by weak astringents—borax, sulph. zinc, tannin—and cleanliness. 5. Use weak solutions of eserine for corneal affections. 6. Atropia solutions are essential to break up recent iritic adhesions. 7. When in doubt, consult early with a specialist.—*The American Practitioner.*

Selections.

EXPLANATION.

In the August number of the JOURNAL AND EXAMINER we published an interesting selected article on "Micrococci in Malignant Diseases," by Dr. JOHN M. KEATING, which was forwarded to us in proof-sheets, without any information in regard to the journal office from which the proofs came. We have since learned that they belonged to the *Medical Times*, of Philadelphia. The following articles, by J. T. ESKRIDGE, M.D., and WILLIAM BARTON HOPKINS, M.D., have been received in the same manner, and evidently from the same office. We consequently credit them to the *Medical Times*, of Philadelphia.—ED.

REPORT OF THREE CASES OF ABSCESS OF THE BRAIN. By J. T. ESKRIDGE, M.D., Physician to the Howard and St. Mary's Hospitals. Read May 3, 1882.

Abscess of the brain is of sufficiently frequent occurrence to make the subject of interest to the general practitioner. The cases reported in this paper are all the more interesting because each, due to a different cause, was associated with dissimilar diseases.

The first case was associated with cancer in several of the other organs of the body; the second, with chronic meningitis; the third, with apparent facial erysipelas and pneumonia, followed by acute meningitis.

Detailed cases of brain lesions lose half of their interest, and become almost valueless to students of cerebral localization, when

unattended by accurate descriptions of the relations of pathological lesions to ganglia, fissures, and convolutions.

I wish to acknowledge the services of my friend Dr. Charles K. Mills, who took an active part in the post-mortem examination of Case I., and rendered me valuable assistance in accurately locating the lesions in the first two cases.

CASE I. *Two Abscesses of the Brain.*—1. The larger one, involving the centrum ovale of the postero-frontal and parietal lobes, deeper portions of the gray matter of the anterior parietal convolution, and superior parietal lobule; 2. The smaller, the anterior two-thirds of the lenticular nucleus, and the adjoining portions of the external capsule and claustrum.

September 8, 1881, Mrs. D., æt. 54, born in Germany of a family several of whose members had died from cancer, had been a sufferer from headache fourteen years. She had a large frame and carried considerable fat. Excepting the head trouble, she had enjoyed excellent health until two years before, when she noticed a small tumor involving the left mammary gland. This proved to be cancerous, grew gradually and was removed by a surgeon one year after its first appearance. There had been no return of the growth, although some pain had been complained of in the region from which it had been excised.

Her head pain had greatly increased in severity during the last few months.

In the early part of July, 1881, the left arm began to feel weak, and ten or twelve days later, the left leg was similarly affected, but to a less extent. About this time she went to the country for her health. Continuing to grow worse, she returned home during August, three weeks before I first saw her, and was able to walk from the street cars to her house, a few hundred yards distant. She was then treated by a homœopathic physician for a few weeks, when I was called in, and made the following notes:

The left leg was almost completely paralyzed, the muscles feeling soft and flabby. The left arm was entirely paralyzed. The muscles of the left side of the face were slightly paretic. The right pupil was normal in size, left slightly dilated, and responded imperfectly to light. There was no paralysis of the

muscles of the tongue, palate, or pharynx. The tongue was slowly protruded in the median line, but when it was held in this position a few seconds it became tremulous, a vibratory tremor taking place in individual muscular fibers. Muscular power was impaired in the right arm and leg, but co ordination was perfect. She had had no convulsions, and there was no muscular twitching.

With the exception of a slight tendency to drooping of the upper lid of the left eye, the ocular muscles seemed to be acting well and in harmony.

Sensation was unimpaired on both sides of the body.

Special Senses.—Vision was equal in each eye, and she read Snellen No. 8, held at about fourteen inches. The ophthalmoscope revealed nothing beyond a slight haziness of the right retina. Taste, smell, and hearing were nearly normal, being well preserved for a woman of her age. Speech was unaffected.

The tongue was moist and slightly coated, appetite poor, bowels constipated, not having been opened for several days. The urine was high colored, sp. gr. 1025, but free from albumen. The bladder was tolerant and acted voluntarily.

She was restless, did not sleep well, and complained bitterly of pain in her head. The pain was usually dull. Its seats of intensity were at the top of the head and above each temple, being worse on the right side. She was intelligent, her mind was clear, but being under the impression that her cancer would return, she worried, had become emotional and imaginative.

Temperature (left axillary) 99°; pulse 76, full, soft, and regular; respirations 24 per minute.

September 10, two days later, during my absence from the city, she was seen for me by Dr. Mills, who reported her to be about in the same condition.

September 12. She was not so intelligent, worried more, and refused to eat. The feet were extended and inverted, the balls of the great toes lying in contact with each other. The internal and posterior muscles of the legs were so firmly contracted that it required considerable force on the part of the attendant to evert and flex the feet, and the effort gave her decided pain. The muscles of the left side of the face were almost completely

paralyzed. Swallowing solid or semi-solid substances was so difficult that she refused to eat.

Temperature, right axilla 96°; left axilla 99.4°; right elbow 95°; left elbow 96.7°. Pulse, 86; respirations 26 per minute. Respiration was largely of the abdominal type. After taking citrate of magnesium, her bowels were opened once yesterday, being the first time in about a week.

September 13. At 11 a.m., the temperature of the room being 80°, after ascertaining her body heat, as indicated in each axilla, I made observations on her cerebral temperature, applying the thermometer to most of the stations used by Broca, Gray, and later by Mills. On the present occasion, the surface temperature of the head was taken at eight different stations, on a subsequent one, at two, and still later at eleven. Hick's surface thermometer was employed and allowed to remain in place ten minutes. On each occasion the temperature of the room was ascertained, and that of each axilla noted. The observations were made by myself between the hours of 11 a.m. and 2 p.m. The selected stations were as follows: 1. A middle frontal station in the center of the forehead. 2. A right anterior frontal station, over the right eye, an inch and a half above the brow, and the same distance from the median line of the forehead. 3. A left anterior frontal station, similarly located on the left side. 4. A right posterior frontal station, near the external angular process of the frontal bone. 5. A left posterior frontal station, corresponding in position on the left side to that on the right. 6. A right parietal station, just above the right ear. 7. A left parietal station, just above the left ear. 8. A right Rolandic station, situated on or near a line drawn over the top of the head from the right to the left auditory meatus, and from two to three inches above the top of the right ear. 9. A left Rolandic station situated similarly to that on the right. 10. A right occipital station, one and a half inches to the right of the center of the occipital region. 11. A left occipital station, one and a half inches to the left of the center of the occipital region.

I shall now give the temperature records in connection with the history of the case, and further details under the head of remarks.

Temperature in right axilla, 97.9°; in left axilla, 98.4°. Pulse 104, weak and unsteady; respirations, 24 per minute.

Surface Temperature of the Head.

Right Side.		Left Side.	
Anterior frontal station,	97.3°	Anterior frontal station,	97.7°
Posterior " "	97.8°	Posterior " "	98.1°
Parietal " "	97.1°	Parietal "	97.9°
Rolandic " "	96.3°	Rolandic "	96.8°

She was unable to void her urine for the first time to-day. Thirty-two ounces were drawn off by the catheter. From this time to the date of her death, just two months later, the catheter was daily required to relieve the bladder. She had not eaten anything for two days Headache was excruciating. One-half of a grain of morphia was required each night to produce sleep, bromide of potassium making her wild and delirious. During the latter part of the day she frequently talked incoherently.

September 15. The temperature of the left Rolandic station was 5.5° higher than that of the right. The intermitting character of the respiration formed a very interesting feature of the case at this time. There was no gradual rise and fall of the respiratory movements as seen in the typical Cheyne-Stokes' respiration. There were twenty-eight shallow respirations per minute. After four or five short and rapid respirations there was an interval of rest of eight or ten seconds, then after about the same number of respirations, came another interval of rest.

During the next week, the pain in the head became more intense, and localized in the top of the head and right temple. The bowels failed to respond to various purgatives and enemata.

September 22. The muscles of the left side of the face showed but little loss of power. The pupils were of equal size. The left leg, as well as the left arm, was now entirely paralzed. The muscular strength on the right side did not fail faster than is usual in one whose general vitality is being lowered.

The conjunctiva of the right eye was congested and watery, the sight being but little impaired.

Temperature, right axilla, 97.6°; left axilla, 98.2; pulse 68; respirations 12 per minute. Respiration was still of the abdominal type. The movements of the abdomen preceded those of

chest, and formed with them a see-saw like, or to-and-fro motion, the chest apparently not expanding until the end of inspiration and beginning of expiration.

September 23. Temperature of room, 82°; of right axilla, 98.9°; left axilla, 98.2°; pulse, 72; respirations 9 per minute.

Surface Temperature of the Head.

Right Side.		Left Side.	
Anterior central station, 96.3°.			
Anterior frontal station,	97.9°	Anterior frontal station,	96.2°
Posterior " "	95.6°	Posterior " "	97.6°
Parietal "	97.6°	Parietal "	98.1°
Rolandic "	97.0°	Rolandic "	96.8°
Occipital "	96.9°	Occipital "	98.2°

The pulse, although only 72 per minute, was very weak, but regular in time and volume. The intermitting character of the respiration was more marked on this than on the preceding day. Three or four respiratory movements were followed by an interval of rest, lasting from twelve to fifteen seconds. The number of respirations did not exceed four in succession, nor were they, at any time, less than three. The interval, or rest, was not longer than eighteen seconds, nor was it less than twelve. The respirations, which were largely abdominal, had to be counted for two minutes to obtain the average number per minute. If the movements of respiration were looked for at the beginning of an interval, none were seen during the first quarter or third of the minute, and only three or four during the second quarter or third; whereas, during the latter part of the minute, there might be eight, six, or only three respirations. Thus:

Inter.	Respirations.	Int.	Res.	Int.	Res.	Int.	Res.	Int.	Res.	Respirations.
	4		4		4		4		4	= 20
15s.	9s.	15s.	9s.	15s.	9s.	15s.	9s.	15s.	9s.	= 120 sec.

It will be seen by observing the above tabular view, that, if the respirations had been counted during one minute only, eight might represent the breathing frequency per minute; and if those paroxysms of respiration, if I may so term them, had been limited to three respiratory movements each, as they sometimes were, six, instead of ten, of the tabulated form, could have been set down as the number of respirations. This character of breathing, sometimes slightly increasing in frequency, con-

tinued until a few days before her death, when it changed to the so-called Cheyne-Stokes' respiration.

Sighing rarely occurred. The pupils were normal. The bowels had not been opened since the 11th instant, notwithstanding various purgatives and enemata had been given. Croton oil had been given by the mouth until it had produced griping pains, and an emesis of glary mucus, yet it seemed to have no effect on the bowels. The patient lived from the 11th of September to the 13th of November without having an evacuation from the bowels. During this period of two months and two days, or about nine weeks, she neither suffered from nausea, vomiting nor distension of the bowels from gas or feces. Her diet for nearly two months just preceding her death was almost exclusively of a liquid nature, she rarely taking any semi-solid food.

September 28. During the last few days the face had been turned to the right, and the head drawn toward the right shoulder. At this time she complained of great pain and soreness in the right and posterior portions of the neck. The parts were hard, swollen, and painful to the touch. An attempt, on my part, to straighten the neck greatly augmented her suffering. Pain was also complained of in the right eye and ear. The former was inflamed, and almost useless as a visual organ, and from the latter there was a constant discharge of yellow pus. The ocular inflammation involved more especially the conjunctiva and cornea. An ophthalmoscopic examination of the right eye was unsatisfactory, on account of the hazy condition of the cornea, and the uncontrollable movements of the eyes. The watch was not heard by the right ear, except on firm pressure.

October 3. She was blind in the right eye and deaf in the right ear. The discharges from the eye and ear continued.

October 13. She remained quiet during the day, but required two grains of morphia to induce sleep at night. The hearing in the left ear varied; at times she heard tolerably well with this ear, and at others she was almost deaf. No improvement in the right eye and ear. A semi-choked disk appearance was noticed in the left eye. and vision was nearly gone. The left eye showed no evidence of external inflammation. No discharge was noticed from the left ear.

Novembr 11, 5 P. M. Temperature, right axilla 95.5°; left axilla 98.2°; pulse 104; respiration, 28 per minute.

The right side of the body felt quite cool. The breathing had changed from an intermitting to an irregular character, and constituted what is known as the Cheyne-Stokes' inspiration, except that there was no lull, during which the hand could not detect feeble movements of the thoracic wall. The respiratory movements gradually became shorter, until they were almost imperceptible, then they gradually lengthened until a full inspiration was taken with considerable effort, followed by a blowing noise. Every paroxysm, or rise and fall of the respiratory acts, included about eighteen respirations. She neither saw nor heard, and was no longer able to speak or swallow. The saliva was wiped from the mouth by the attendant, or she made an awkward and ineffectual effort to do it herself, showing that she was probably not entirely unconscious. Her urine was passed involuntarily. No morphia had been required during the last few days. The neck remained in about the same condition that it was on September 23. The muscles on the left side of the face were paralyzed, the mouth being drawn well over to the right side.

She died, exhausted, November 13, 1881, at 12:30 P. M.

Post-mortem examination was made three hours after death, by Drs. Mills, Bissey, and myself.

Brain.—The venous sinuses and arteries were carefully examined, but were found to present nothing abnormal. No lesion of the membranes was discovered. The pia mater was unusually transparent (almost bloodless). The optic nerves were normal in appearance, and no perceptible lesion was detected in the other cranial nerves. No effusion. Entire surface of brain examined through the transparent pia mater before its removal, and no pathological condition was discoverable. On stripping the pia mater from the right hemisphere, the external surface of the convolutions was still found to be intact. Before completing the process of removal of the pia mater from the right hemisphere, a large quantity of a dirty grayish-white liquid suddenly escaped through a small opening at the bottom of a secondary fissure just in front of the upper extremity of the fissure of Rolando.

The right lateral ventricle was laid open by an incision through the lateral border of the corpus callosum. The surfaces of the intra-ventricular ganglia were healthy in appearance. The floors and roofs of the cornua showed no lesion. A longitudinal incision was made through the middle of the head of the caudate nucleus and the optic thalamus, deep enough to pass through these bodies and the lenticular body, just to the inner margin of the insular and sphenoidal cortical substance (gray matter). This incision exposed a small isolated abscess about one inch in length, three-quarters in depth, and one-third of an inch in width, involving the following parts from before backwards; the anterior two-fifths of the lenticular nucleus, and the adjoining portions of the external capsule and claustrum. The caudate nucleus, optic thalamus, and the entire internal capsule, were not changed in appearance. The posterior three-fifths of the lenticular nucleus, and a very narrow strip of its anterior two-fifths above the abscess, were intact. Vertico-transverse sections through the prefrontal and occipital regions showed no lesions. Further transverse sections revealed a nodulated mass and large abscess of the centrum ovale of the postero-frontal and parietal lobes.

The nodule was about the size of a large hickory nut. It involved the white matter and the under portion of gray matter at a point corresponding externally to the superior parietal lobule or convolution, a little anterior to the middle of the inter-parietal fissure. Its anterior extremity just grazed the middle portion of the gray matter of the ascending parietal convolution. The nodule was apparently firm. The abscess extended on all sides of the irregular body, and the exact limits of the former were determined by transverse sections to be as follows: Its anterior extremity reached a point in the centrum ovale corresponding to a plane, just in front of the caudate and lenticular bodies, externally through the anterior halves of the first, second, and third frontal convolutions. Its posterior extremity reached a point in the centrum ovale of the parietal, near the plane of the parieto-occipital fissure. The abscess in its anterior half involved the white matter only, but close up to the gray substance. Its posterior portion involved the white matter, also the inner part of the gray substance of the adjoining convolutions.

The posterior one-fourth of the abscess involved the gray matter to the greatest extent, and approached near the surface at the most posterior part. It had, therefore, destroyed the centrum ovale directly in relation with, *a*, the posterior parts of the first and second frontal convolutions; *b*, the middle regions of the ascending frontal and ascending parietal convolutions; *c*, the middle and lower portions of the superior parietal convolutions; *d*, the upper portion of the inferior parietal convolution. The gray matter destroyed was chiefly in the anterior parietal convolution and the superior parietal lobule. The entire length of the abscess was between four and five inches.

The left hemisphere showed no pathological lesions.

Thorax.—Heart and large vessels were normal in appearance. The apex of the left lung contained four cancerous nodules, varying in size from that of a lima bean to a horse-chestnut. The apex of the right lung was the seat of a nodule about the size of a hickory-nut. The middle and lower portions of the lungs were anæmic. The pleuræ were normal, except at the apices of the lungs, where slight adhesions were formed over the nodular growths. Slight effusion in the left pleural cavity.

Abdomen.—The uterus, ovaries, and ligaments of the womb were the seat of fourteen cancerous nodules, most of which were not larger than a hickory-nut. The liver, spleen, kidneys, and pancreas were anæmic, but free from cancerous growths. The stomach was empty, pale, and contracted, but no induration of its walls was discovered. The upper and lower bowels contained a slight amount of fecal matter scattered throughout their entire extent. The contents of the bowels were soft. No evidence of intestinal obstruction could be detected. The rectum was empty.

Microscopical Appearances.—The nodule in the brain was composed of blood-vessels, brain substance, extravasated blood, and blood-pigment. No cells of a suspicious character were seen.

Remarks.—The abscesses cannot be attributed to the presence of a cerebral tumor. The history of the removal of a malignant growth from the left breast one year before, naturally suggested to me the probability of a similar one in the brain. No local interference with the venous or arterial circulation of the brain was detected at the autopsy. As causative agents, apparently

nothing beyond a profound lowering of the vital forces and the blood infection attendant upon the presence in the system of several cancerous masses, were found. If in these lies a sufficient cause, I am at a loss to know why abscess of the brain is so infrequently found in connection with cancer of other portions of the body, or why it is not more generally associated with general anæmia.

Remittent respiration is referred to by Hughlings Jackson (Reynold's *System of Medicine*), although he does not give it that name, and Cheyne-Stokes' respiration by nearly every recent author on nervous diseases, but I find no allusion to the peculiar intermittent variety found in this case, in which three or four respiratory movements of equal length and depth were followed by distinct intermissions, varying in length from fifteen to eighteen seconds.

Just before the patient's death, when the respiration approached the Cheyne-Stokes character, there was no period or interval of several seconds duration, during which the respiration intermitted, but the movements were continued regularly, increasing or lessening as the efforts at respiration reached the maximum or minimum.

One or more cases with respirations differing from the Cheyne-Stokes' similarly to this may be found described in a joint paper presented at the Northern Medical Society of Philadelphia, by Drs. Mills and Ott (*Phila. Med. and Surg. Reporter*, July 2, 1881.

The abdominal respiration noted in the clinical history may be imitated by any one in health by first voluntarily expanding the abdomen, then allowing the chest to be inflated subsequently, the expiratory movements taking place in the order of time, in which the inspiratory were effected. It differs from the form of abdominal breathing referred to by Hughlings Jackson in connection with cerebral hæmorrhage. It is a grave omen, and is most commonly found in cases of great prostration, as in typhoid fever and shock, or it is associated with certain brain diseases attended by a similar condition of the vital forces.

The inflammatory changes that occurred in the right eye and ear, with the subsequent loss of vision and hearing in these

organs, cannot be accounted for by any appreciable lesion in the pons, medulla, or at the base of the brain adjacent to the optic nerve. The well-known experiments of Waller, Bernard, and Brown-Séquard, on the effects of stimulation and paralysis of the cervical ganglia of the sympathetic nerve aid us in attributing the trophic changes found in the eye to the local trouble present in the right side of the neck, which preceded the affection of the organs of the special senses. I regret that we failed to examine the indurated tissues of the neck, and to ascertain the condition of the sympathetic nerve and ganglia in this region.

The general and cerebral thermometric records of this case present some points of interest.

General Thermometry.—According to the physiological experiments of Hitzig, Eulenberg and Landois (quoted by Mills, *Phila. Med. Times* for January 18, 1879), the heat-controlling centers are situated in the cerebral cortex of the motor regions, around the fissures of Rolando, especially in the ascending convolutions. Usually, but not constantly, destruction of this area gave rise to increased, and irritation produced lessened temperature in the extremities of the opposite side of the body. In the present instance, the large abscess involved to some extent the supposed thermic area of the right side. Comparative observations of each axillary temperature were made on seven different occasions, and were as follows:

	Right Axilla.	Left Axilla.
Sept. 8		99°
" 12	96°	99.4°
" 13	97.9°	98.4°
" 14	97.9°	98.2°
" 19	97°	98°
" 22	97.6	98.2°
" 23	98.9°	98.2°
Nov. 11	95.5°	98.2°

The temperature of the right or non-paralyzed side of the body only once exceeded that of the left, when the thermometer registered 7° higher in the right than in the left axilla. The temperature of the left armpit ranged from 5° to 3° higher than that of the right. During the first shock to the system produced by the abscess, and just before death, when paralysis was most com-

plete, the difference between the two sides of the body heat was greatest, being 3.4° at one time, and about 3° at another.

Cerebral Thermometry.—I shall only refer to the extended observations of Broca, Gray, Maragliano and Sepelli, on cerebral thermometry in health and disease. Their conclusions are in harmony with each other, and their utility has been demonstrated by observations made on at least two cases of tumor of the brain, one by Dr. Charles K. Mills (*Phila. Med. Times*, January 18, 1879), and the other by Dr. Landon Carter Gray (Hamilton's work on Nervous Diseases, 2d ed., p. 22), who was the first in this country to investigate the surface temperature of the head in health. Dr. Gray found the average normal temperatures of the stations on the left side of the head to be for the frontal, .65° ; for the parietal, .85° ; for the occipital, .72°, higher than those of the corresponding stations on the right side. He gave as the average normal temperature of the right frontal station, 93.71 ; of the left, 94.36° ; of the right parietal, 93.59° ; of the left, 94.44° ; of the right occipital, 91.94°, of the left, 92.66°. Variations of more than 1.5° he considered suspicious of disease at that point, and of more than 2° strong evidence of a pathological condition.

Comparing the results of the surface temperatures of the head made on the case reported at length in this paper with those reported by Gray and others, we shall find several points of difference. The temperatures were from 2° to 4° higher than those obtained on the heads of healthy subjects, although the axillary temperatures of this case, taken at the same time, were normal or subnormal. The temperatures at the several stations on the left side of the head exceeded those on the right by about .5°, which is nearly in accord with the normal difference. The temperature at the left Rolandic station was .2° lower than that of the right on one occasion only. With this exception, the temperatures on the left side were the highest. On September 23, when paralysis of the left side of the body was complete, the surface heat of the left posterior frontal station was 2°, and at the left parietal 1.5° greater than at the corresponding stations on the right side. Before complete paralysis had taken place in the left leg, there was nearly an equal increase of heat at the

frontal and posterior stations; later, when the leg was powerless, the temperatures of the posterior stations exceeded their normal more than did those of the anterior. In the observations on cerebral thermometry in connection with brain tumors made by Drs. Mills and Gray, the stations nearest the growths, both of which happened to be on the right side, gave the highest average increase of temperature.

The area to which the occluded vessels in embolic hemiplegia are distributed is said to have a subnormal temperature.

I am not aware that the results of any observations of the surface temperature of the head made on persons suffering from abscess of the brain have been reported. No valuable conclusions can be drawn from observations made on a single case; especially is this so when the surface temperatures of the head are not more frequently taken than in the history of the one just reported. In health the head temperatures are from 4° to 6° lower than that of the axilla, being lowest posteriorly. In the present case, with a normal or subnormal axillary temperature, the head temperatures were elevated from 4° to 6° above their normal, the occipital, in one instance, being the highest, equalling the axillary, and exceeding its own in health 6°.

Dr. Allan McLane Hamilton, of New York, has reported the results of his observations on a case of meningitis, in which the occipital temperatures exceeded those of the other regions of the head. (Ibid.)

It is doubtful whether the local temperatures of the head in abscess of the brain will aid us in locating the disease to any particular region, but if the results of the observations already made on cerebral thermometry in brain tumor be sustained by future investigations, the surface thermometer may help us in differentiating abscess from tumor of the brain.

In a case of brain trouble, in which the diagnosis is between tumor and abscess, a limited surface area of one side (especially the right) of the head, with a temperature considerably elevated above the heat of the surrounding parts, would point to tumor; whereas, an elevation of the entire cerebral surface temperature would indicate abscess.

The direction of the destructive lesion in the brain, if we may

judge by the progress of the paralysis, was from before backward, showing that the nodule occupied the region last involved, instead of the first, as would have been the case if it had been caused by an embolus, and had in its turn given rise to the abscess.

CASE II. Abscess of the brain following chronic meningitis; sudden death.

On the notes of Dr. Dennis the history of the following case is based:—

Mr. G. S., æt. 56, German, shoemaker, served in the German army, and, when a young man, led an irregular life. He presented no marks of syphilis, and no history of his having suffered from that disease could be ascertained. He had always been a moderate drinker of beer, but never indulged in the stronger alcoholic liquors.

He was a large, heavily built man, and, with the exception of occasional headaches, had enjoyed good health until the latter part of the year 1880, when the loss of his wife, followed by other domestic unhappiness, seemed sufficient to disarrange an already ill-arranged nervous system. His temper had been irritable for many years, but now he became subject to frequent outbursts of passion, during which he would vent his spleen on any one who chanced to be near him. His memory became very treacherous, often getting confused in his business, and even at times being unable to remember the day of the week. His headache became constant and more severe.

During the spring and early part of the summer of 1881, he had what he called "rheumatic attacks," during which, while attending to his usual duties, he would be seized suddenly by a sharp pain in the course of the left sciatic nerve, followed by immediate paralysis of the left arm and leg, compelling him to sit down to save himself from falling. During the attacks he did not lose consciousness. The paralysis never lasted longer than a few minutes, power of motion returning, and seeming to be as good as before the shock. The frequency of the hemiplegic seizures, two or three attacks often occurring weekly, depended upon causes giving rise to outbursts of passion. Sudden changes of weather were apparently associated with the nervous disturbance.

His symptoms remained unchanged until the latter part of October, when, in a fit of anger, he fell to the floor, frothed at the mouth, and became convulsed. No paralysis followed the convulsion, but the headache steadily increased, compelling him to take to his bed. As on this, so on every succeeding day during his entire illness, he remained in bed only a portion of the day.

The head-pain, now constant, was so severe that it prevented continuous sleep, and from short naps, which he would occasionally get, he would be awakened suddenly by violent exacerbations of pain.

He was attended by homœopathic physicians until November 12th, two weeks before his death, when Dr. Dennis was requested to take charge of the case. His temperature at this time was 99.5°; pulse 70 per minute, full and strong; respirations natural; appetite capricious; tongue coated, stomach intolerant, and bowels obstinately constipated. Urine scanty, high-colored, and free from albumen, was voided voluntarily until a short time before his death, when it was occasionally passed involuntarily. The skin was slightly jaundiced. He complained of occasional chills, and was very sensitive to changes in the atmosphere. Nocturnal delirium soon begun. He was very restless, saw strange things and people in his room, and would occasionally rise during the middle of the night and awake the whole family, telling them that it was time to get up for the day. At times his mind seemed to be a blank, he could not tell the day of the week, and would frequently be unable to distinguish day from night. On other occasions his mind was clear, but during these lucid intervals he could converse intelligently and connectedly for a few minutes only, thought suddenly ceasing to be generated, when a vacant stare would be his only reply to questions which a few minutes before he had answered promptly and correctly. Impressions were persistently and obstinately adhered to, and any attempt at persuasion to the contrary was not calmly received. His headache, principally frontal and right-sided, was now sharp and lancinating, requiring hypodermic injections of morphia and atrophia to relieve it. The orbital and other branches of the fifth nerve were very sensitive to pressure. His temperature during

Dr. Dennis's attendance, though usually above the normal, reached 100° Fah. only on two or three occasions. The muscles of the left arm and leg were decidedly weaker than those of the right, yet sufficiently strong in the leg to support his weight for a short time. Turning in bed was difficult. When the left arm, unaided, was held at right angles with the body a decidedly muscular twitching began. Occasional muscular twitchings took place when the arm was passive.

He thus continued, gradually getting worse, until November 25th, about five weeks after his giving up work, when Dr. Dennis requested me to see him in consultation.

When I first entered the room he seemed bright, and conversed intelligently. He had not talked long, however, before he began to hesitate in his answers, appearing to have difficulty in understanding me, and being more puzzled in framing answers to my questions. Soon he was unable to form more than one or two words of a sentence, and finally uttered a meaningless "Yes" or "No," or stared vacantly when spoken to. Pupils were small and equal in size, brows were contracted, and he complained of great pain in his head. The eyes were very sensitive to light, making it extremely difficult to make an accurate or satisfactory ophthalmoscopic examination. The acuteness of vision and the condition of the other special senses could not be ascertained. The retinæ were found to be slightly hyperæmic, and the optic disks somewhat swollen. No muscle or groups of muscle were paralyzed, but those of the left arm and leg were weak, and an attempt at co-ordination produced a muscular tremor. The left side of the face was apparently less expressive than the right. The heart, lungs, liver, and kidneys showed no evidence of disease. Temperature was 100°; pulse, 68, and full; respirations 16 per minute.

An opinion was given that the man was suffering from chronic meningitis of months' duration, and that a recent complication of softening or abscess of the brain had taken place.

As Dr. Dennis had enjoined rest in bed, and was doing everything necessary for the comfort and welfare of his patient, no change in treatment was made.

The next day Mr. S. was feeling so comfortable that he got up,

dressed himself, and without assistance went down stairs from the third to the first floor to dinner. After eating he was helped to his third-story room. He expressed himself as feeling tired and sleepy, and lay down to rest. He was left alone about one hour, when one of his daughters looking in his room found him on the floor, where he had fallen in getting out of bed. The left side was now found to be entirely paralyzed. He was placed in bed and left alone. Shortly after this, when looked after, he was found asleep and snoring loudly. As his repose was supposed to be a natural one, he was not immediately disturbed. About 6 P. M. the daughter, thinking it strange that nothing was heard from her father, went into his room and endeavored to arouse him, but to her surprise found him dead.

Post-mortem examination thirty-six hours after death.

Brain.—The dura mater, over the entire extent of its bony attachment, was inflamed and firmly adherent to its osseous envelope. At the base of the brain the external membrane was so closely attached that it could be separated from the bone only in piecemeal by the scalpel. The cranial nerves were apparently uninvolved in the diseased process. No abnormal quantities of fluid were found in the subarachnoid space. The blood-vessels of the pia mater were engorged, and the membrane was slightly adherent to the brain substance. The entire external surface of the brain appeared nearly normal, presenting no gross lesions of softening. Superficial portions of convolutions in the neighborhood of the greatest amount of inflammation were examined under the microscope, and found to be in nearly a normal condition.

An abscess was found on the right side, involving chiefly the centrum ovale of the pre-frontal region, but also to some extent, in its middle part, the inner layers of gray matter of the first, second, and third frontal convolutions. On attempting to localize exactly the posterior limits of the abscess, it was found that a vertico-transverse section through the anterior lobe made just in front of the pre-central fissure externally, and striking the anterior extremities of the ganglia internally, just grazed its posterior limits. The abscess extended forward to within one inch of the anterior extremity of the lobe. Very few, if any, of the white fibers from the ascending frontal convolutions were involved. At

the posterior and interior boundaries of the abscess a bloody nodulated mass two-thirds of an inch in its greatest dimensions was found. Other portions of the brain were apparently healthy. No emboli or thrombi were found.

The abscess did not communicate with the lateral ventricle, nor open upon the external surface of the brain to account for sudden death.

Microscopic examination of the nodulated mass and adjacent parts showed no new cell formation tissue; the nodule and the parts around exhibited nothing besides disintegrating brain tissue with its blood-vessels, and a few blood corpuscles.

Remarks.—We cannot boast of our knowledge of the functions of the antero-frontal lobes, yet pathology, and later, physiology, have from time to time thrown some light on this obscure subject. The "crow-bar case" of Bigelow, the bullet wound related by Trousseau (quoted by Ferrier), the other cases mentioned, analyzed by Charcot and Pitres (reviewed by Ferrier, and quoted by Mills, *Phila. Med. Times*, Jan. 18, 1879), the tumor of the right antero-frontal lobe presented to the Pathological Society of Philadelphia, by Dr. C. K. Mills (*Transactions of Philadelphia Pathological Society*, vol. ix. page 106), and the lesion just described in connection with case second of this paper, in all of which the antero-frontal lobe was destroyed to a greater or less extent without any paralysis attributable to the leison in this region, lead us to accept the conclusion of Charcot and Pitres, that motor disturbances of the slightest character do not necessarily follow lesions in the antero-frontal regions.

For the light physiology has shed upon the functions of this region of the brain, I quote from Dr. Mills's article on tumor of the brain (*Phila Med. Times*, Jan. 18, 1879): "Ferrier, *Functions of the Brain*," p. 230, in his experiments on the antro-frontal regions of the brain of the monkey, generally obtained negative results. Electrical irritation usually caused no special manifestations. Removal or destruction was not followed by any definite physiological results. The animals operated on, however, while not actually deprived of intelligence, had apparently lost the faculty of attentive and intelligent observations. When considering the hemispheres physiologically, Ferrier argues also that

the power of fixing the attention and concentrating consciousness depends on inhibition. He shows that if the centers of inhibition, and thereby the faculty of attention, are weak, or present impulses unusually strong, volition becomes impulsive rather than deliberate."

It will be remembered that the patient in case second, where the leison was in the antero-frontal lobe, presented symptoms in accord mainly with the physiological experiments of Ferrier. The man was emotional and passionate, and his power of attention was weak and of short duration. He seemed at times to lose will power. Only temporary paralysis was observed, and this always after some fatigue, which may have induced some restraining influence from other portions of the brain, or what is probably more correct, as some of the fibers connecting the motor region of the brain with the muscles of the arm and leg were destroyed, the remaining healthy fibers became exhausted from overwork.

Among the other interesting features of the second case are, the sudden death and the patient's ability at times to walk well, although at others the paralysis was so extensive that he was not able to stand.

That he was able to walk at all was apparently due to the fact, sustained by the post-mortem examination, that not all of the fibers through which motor impulses passed from the brain to the muscles of the leg were involved in the destructive process. When he was resting, a few fibers, for a short time, could do the work of a greater number.

If this view be correct, it will enable us to explain the cause of sudden death, although there was neither hæmorrhagic apoplexy, nor bursting of the abscess into the ventricles, or on the surface of the brain. The unusual strain that he put upon his crippled brain a few hours before his death, in descending and ascending two flights of stairs, and in sitting up to eat his dinner, so exhausted his nerve centers that its effects came like a shock from a severe cerebral hæmorrhage. The occurrence of the hemiplegic seizures may be accounted for, probably, by the sudden overloading of the congested vessels of the brain during his fits of anger.

CASE III.—Abscess of the brain; gangrenous inflammation of the right sylvian artery, and occlusions of some of its branches; facial erysipelas; pneumonia in the left lung.

J. R., male, aged about 40, laborer in a sugar refinery, had been sick and delirious for several days, was brought into St. Mary's Hospital during the past winter, in an unconscious condition. His previous history could not be ascertained. His respirations were rapid and abdominal; pulse small, weak, and irregular; temperature not taken. No urine was obtained for examination. His face was swollen and of a dark erysipelatous hue. The swelling around the eyes was too great to admit of an examination of the pupils. The facial swelling and comatose condition prevented the detection of local palsies, if such existed. He did not regain consciousness, but died about six hours after his admission.

Autopsy eight hours after death.—The abdominal cavity was not opened. The entire left lung was in the second stage of pneumonia; the right lung and the heart were in nearly normal condition. Only slight quantities of serous fluid were found in the pericardium and right pleural sac; considerable fibro-serous effusion was found in the left pleura.

Brain.—The dura matter was slightly congested, but there were no evidences of decided inflammation in it. The pia matter covering the convex surfaces of both hemispheres, and that beneath the right was opaque. Its blood-vessels were highly engorged, and deposits of lymph and pus were found. At and just posterior to the right Sylvian fissure there was considerable quantity of pus, and sufficient lymph to so mask the structures at this point as to make them look like one mass of inflammatory products. The trunk of the Sylvian artery was almost black, its caliber lessened, but apparently not entirely obliterated. Some of its secondary branches, especially the lower ones from the parieto-sphenoidal and sphenoidal arteries were occluded and seemingly gangrenous. After carefully removing the pia matter, the convulsions and brain substance of the left hemisphere appeared nearly normal. The under and external surfaces of the right temporo-sphenoidal lobe from its anterior tip to its junction with the occipito-parietal lobules were softened to the depth of

about an eighth of an inch. A superficial abscess or a mass of softened brain substance, about one inch in all its dimensions, occupied the anterior extremities of the first, second and third temporo-sphenoidal lobules. The contents of the abscess were, in the center, a watery fluid, surrounded by broken down brain substance and blood constituents, and on the outside, a thick layer of pus and other exudative matter.

The cranial nerves were but little encroached upon by the inflammatory deposits. Nothing special was noticed in the sinuses of the brain besides their blackened and engorged appearance. The ganglia were apparently normal.

The patient was not seen by me during life, and he was under the observation of Dr. Strittmatter, the resident physician of the Hospital, only six hours before his death. The circumstance of his death was investigated by the coroner, which necessitated great hurry in examining the brain and its membranes and sinuses. The consideration of the cause of the abscess and meningitis, and the nature of the erysipelas, I shall leave for those who may take part in the discussion.

[After the reading of the above paper, Dr. Charles K. Mills said:

A careful examination of the cerebral sinuses might have thrown some additional light upon the third case. It was of great importance in all cases of abscess of the brain to investigate the condition of the sinuses of the dura mater. Abscess and thrombosis were not infrequently associated, and sometimes held to each other a causative relation. In the account of the condition of the patient (Case III.) it was stated that his face was swollen, and of a dark erysipelatous hue, the swelling around the eyes being too great to admit of an examination of the pupils or of the interior of the eyes. The erysipelatous appearance may have been the psuedo-erysipelas which accompanies some forms of cerebral thrombosis. The opthalmic veins end in the cavernous sinuses. These veins have also a communication with the veins of the face. The facial vein, beginning on the anterior portion of the head, descends about the middle of the forehead, as the frontal vein, to the root of the nose, and is then continued downwards around the angle of the eye, under the name of

the angular vein. This angular vein communicates with the ophthalmic vein. Hence it will be seen how swelling of those veins outside of the skull, which inosculate with the sinuses within, may become the most striking and positive signs of obstruction of the sinuses. Œdema of the eyelids and face, and congestion of the eyes, mean venous stasis in the parts drained by the ophthalmic veins. These phenomena were present in Dr. Eskridge's third case.

These three cases of abscess of the brain, well studied and described, constitute a valuable addition to the literature of intracranial diseases.—*Phil. Medical Times.*

BILE AND DIGESTION. By J. WM. STOKES, M. D., Corinth, Miss.

The investigation of the function of bile in its relation to digestion, involves the consideration of two dependent questions: I. Does bile perform *any* function in digestion? and II. What is that function? And since upon the answer rendered to the former depends the pertinence of the latter, we shall proceed directly to its consideration.

I. First, then, does bile enter at all as a factor into the process we call digestion?

When we consider that bile is the constant secretion of the largest gland in the body; that this gland is supplied with blood from two distinct sources, and in weight is nearly 3 per cent. of the whole body; the inference by analogy alone in the correlation of nature's processes, and especially those exhibited in the animal economy, is that it should perform some highly important function or functions in that economy. That it is poured into the upper part of the intestine when important processes of digestion are transpiring, and only traces of it find exit through the anus with the débris of nutrition, creates strong presumption of some office peculiar to it in digestion. It is still conceivable and possible, however, that bile is solely excrementitious in character; and hence we will first direct attention to this phase of the subject.

Now, bile is either (1) purely an excrement, or (2) enters as a factor in digestion—including in the term absorption. These two reciprocal propositions cover all the logical possibilities in reference to the presence of bile in the intestine; for if bile perform *any* function in digestion, it cannot be solely excrementatious in character, and *vice versa*. Of course, it might perform its function, be broken up in the process, and all its constituents discharged with the débris of the system; but even in that case it could not strictly be termed an excrement. Yet, not even in this acceptation would the term apply to bile. Hence we shall address ourselves in the first instance to the elimination of the possibility that bile is an excrement, and therefrom the last term in the above antitithesis will follow by necessity.

(1) Bile is not an excrement. Were this its character in reality, we should find it all, or its constituents, in the excretions of the body; and there are but two main routes by which it may find exit—(a) with the alvine dejections, or (b) with the urine. Hence it must all be passed with the fæces or with the urine, or complementary portions by each of these routes. No account is made here of the excretory functions of lungs and skin: since the composition of biliary matters is such as to preclude the possibility of their ejection from the system in this way.

(a) It is not all passed with the fæces; nor yet more of any element, than might be accounted for by accidental entanglement. As a matter of course, cholesterine, pre-existing in the blood as an excrementitious principle, is to be regarded as holding a *merely* accidental association with bile in common with other liquids and secretions of the body. With this preface, we proceed to scrutinize and compare the data upon the subject.

By careful and protracted observation, Bidder and Schmidt found that a dog weighing 8 kilogrammes excreted in five days 97.3 grm. fæces, 40.9 grm. of which were solid. The solid matters of bile secreted in the same time should be 39.52 grm.—i. e., nearly equal to the solid portion of the fæces in this case. But the fæces showed only traces of bile solids upon application of the usual tests; and in any case it is evident that vastly more

than 1.38 grm. of the solid fæces must have been furnished in the given time, by the débris of nutrition and waste.

Now it is true, that if the bile solids had split up in their passage down the alimentary canal their elements would not give the characteristic reaction. How is it, then, in reference to the elements of bile in the fæces?

Sulphur is one of the most constant of these elements, and in bile of dogs amounts to 6 per cent. of the solids. Being very little subject to change of any kind, this element should be readily detected. Hence in 39.52 grm. solid bile secreted in 5 days, there should be 2.37 grm. sulphur. The fæces in the given case contained, however, only .334 grm. sulphur, more than half of which, it was estimated, must have been due to the abundant hairs present in the fæces, It is evident, therefore, that but a small proportion of the sulphur secreted in bile in the given time passed out with the fæces.

Cholalic acid also enters largely as an ultimate element of bile; and its presence is readily detected. In 1862, Hoppe collected for three days, and weighed, the fæces of an 8 kilogramme dog. They aggregated 287 grm.; in which was found by analysis 1.1 grm. cholalic acid for the entire time, or .36 grm. per day. Now, according to the accepted standard for a dog of that weight, the solid acids of bile secreted in 24 hours would be 4 grm. But .36 grm. cholalic acid, by synthesis, would represent .46 grm. tauro—or .41 grm. glyco-cholic acid; hence less than ½ grm. out of the 4 grm. secreted and discharged into the intestine, found exit with the fæces. It follows, therefore, that but a small portion of bile solids, and this portion mechanically entangled most probably with the débris of the system, is carried out with the fæces.

To this conclusion it may be objected that the premises are insufficient in number to establish their generality. It must be remembered, however, that the above are typical cases, expressing the *general results* of several experiments of several experimenters, and are accepted by physiologists as facts.

(b) We come now to consider the question in reference to the only other avenue of escape as an excrement—the urine. Unless investigation here gives evidence that the complementary

portion of bile solids finds exit in this way, our proposition is established; the excrementious character of bile is negatived; and the other term of the antithesis follows necessarily from its exclusion.

It is a matter of some regret, that in observations upon dogs affected with biliary fistulæ, attention was not extended to the urine also; but the data furnished by experiments, directed originally to a different end, are entirely competent to decide the point now in question.

By scanning the results of Lehman's series of experiments upon himself, with a view of determinimg the relative constituents of urine under various kinds of diet, we learn that upon a purely nitrogenous or animal diet, he excreted in 24 hrs. 53.2 grm. urea; upon a purely *non* nitrogenous diet, 15.4 grm. urea in the same time. This last, then, may finally be assumed to represent the normal daily amount contributed from all sources in the body, independently of food—from secretions and disassimilative process. Now urea bears to the solids of urine the proportion .524; hence 15.4 grm urea represent 29.6 gram. solid matters in the the urine in 24 hrs.; and since the amount of bile secreted in 24 hrs. is known to be affected to a scarcely perceptible degree by various foods and conditions, its solid matters in the same time would aggregate 30 grm.—i. e., the solid matters of bile secreted exceed the solid matters of urine in the given time by .4 grm.

But beyond doubt much of the urea is the product of disassimilation of nitrogenized tissues; so that the real excess of bile solids secreted over the portion by any possibility excreted in urine must be very large indeed—if in fact any is so secreted.

Some additional weight is given to this by the experiments of Prof. A. Flint, Jr., upon the pedestrian Weston, and corroborated by the observations of Dr. Pavy upon the same individual. These gentlemen found that urea—the element of urine, which must contain the major portion of bile solids excreted by this route—is dependent in amount upon muscular exercise more than any or all causes else.

During the five days' walk, included in the period of observation, Weston ingested daily in food 234.76 gr. nitrogen. The

entire daily amount excreted in urine and fæces was 361.52 gr. Now, 234.76 gr. must represent all the nitrogen by any possibility derived from food ingested. Hence, 361.52 gr.—234.76= 126.76 gr. must represent the portion of nitrogen furnished from all sources in the body independently of food—*i. e.*, from disintegrated tissues and bile, say, five times this, or 633.8 gr., equal the amount from these sources during the day's walk.

In the same period, the solid matters of bile alone would equal 2,310 gr., and by quantitative analysis of its nitrogenized constituents, the nitrogen thus supplied would be 34,175 gr. Now, the loss of weight actually sustained during the walk was 26072 gr., 3 per cent. of which, or 782.2 gr., were nitrogen. That is, the nitrogen of the disintegrated tissues alone exceeded, by 148.4 gr., the entire amount excreted by both fæces and urine, over and above that derived from food. The products of disassimilation *must* be excreted, so that it is difficult to see how bile could have furnished any part of the amount. The conclusion seems irresistible, therefore, that but a small portion, if any, of the bile solids or fluids escape from the body through the way of the urine.

An interesting question presents itself here as to the ultimate destination of bile. It is constantly secreted and discharged into the duodenum during the process of digestion; it is not excreted as a whole, nor yet appreciably in its elements—what becomes of it?

Most probably it is absorbed from the intestine after performing its part in digestion (if any), and returned to the liver, to be again secreted and discharged—a sort of circulation of bile similar to that of blood.

Lafter injected the coloring matter of rhubarb and sulphate of soda into the duodenum of a dog, and observed in the space of a minute the same colors in the bile collected from a biliary fistula.

Schiff injected 180 c. c. fresh ox bile into the duodenum of a dog that, previous to the experiment, had discharged 2 c. c. bile from his fistula in 20 minutes. After waiting a short while, the amount collected in 20 minutes from the fistula was 10 c. c., and at the end of an hour after the injection 8.5 c. c. in 20 minutes.

Further, the experiments of Heidenhain show that bile of guinea-pigs, as a rule, gives no reaction with Pettenkoffer's test; yet, if ox bile be injected into the duodenum of one affected with a biliary fistula, in one-half hour thereafter, and for one, two, three hours, a distinct reaction is given by the bile collected from the fistula. This gentleman also observed a change in the color of dog bile soon after the injection of fresh ox bile into the duodenum.

This would explain a fact generally observed, that the amount of bile secreted in a given time is diminished by purgation; where doubtless the bile is swept out of the intestine, entangled in its contents, ere it can be absorbed. Thus the amount secreted by the liver is diminished, until this unexpected loss can be repaired from the resources at hand. This is precisely similar to the fact observed by Schiff, that the rate of secretion is at once diminished by diversion of bile from the intestine.

This concludes what we have to say upon the excrementitious character of bile. We have shown that neither is it, or any considerable portion of its elements, excreted by the urine and fæces severally, nor collectively by both.

(2) Is there now any *positive* evidence that bile is intimately concerned in digestion?

At the outset here, it is a significant fact that ingestion of food is followed immediately, and for some time thereafter, by a largely increased flow of bile into the intestine—a fact more marked, it is true, in animals that feed less frequently than man; yet in man sufficintly marked to indicate an epoch in its flow. Furthermore, after reaching its climax, it gradually subsides, as the digestive process approaches completion, into a condition of stasis until the stimulus is reversed. And if this be indefinitely withheld, establishing the condition of fasting, and the animal killed in this state, the bile bladder is invariably found to be distended with the secretion; whereas, if killed soon after feeding, the bladder is always found empty. I shall not dwell at any length upon the class of sensations, referable to digestion, which by common consent is attributed to disordered function of the liver. This vulgar opinion may not possess great scientific significance of itself; but certain it is, that such symptoms are most generally re-

lieved by administration of those agents which act electively upon the liver, and stimulate it to greater activity.

In further corroboration of this view is the observation of Eaglesfield Smith, that great benefit accrued to a patient affected with jaundice from the administration of fresh bile from a mammal. It is not unworthy of remark, too, at this juncture, the close analogy subsisting between the symptoms characteristic of a well-developed case of jaundice, and those exhibited by animals affected with biliary fistulæ. The same fetid fæces and flatus, the same progressive emaciation characterize both; and if in the former the condition be not arrested, the same result ensues in both; a correspondence which might have been anticipated, since the result should be the same, whether bile be diverted from the digestive process directly by biliary fistula, by occlusion of the ductus communis or by refusal of blood to surrender in the liver its biliary material. The result is in reality the same—absence of bile from the digestive process; and in all cases alike nutrition is interrupted.

We come now to the consideration of a class of experiments, to which objection has been made, rather impertinently, that they establish a pathological rather than a physiological condition. So they do; but it is this very pathological condition, which remains and gradually increases in gravity after the immediate effects of the operation have subsided; it is this very condition that is fraught with information in reference to the function of bile in digestion. For, if it performed no function, then should its absence from the process be attended by no untoward consequences. We refer to experiments upon animals in which the bile was diverted from the intestine by means of biliary fistulæ. And first in reference to perseverance, success and uniformity of results, stands Schwan.

He established biliary fistulæ in eighteen dogs, ten of which died from the direct effects of the operation. In two the duct was re-established, and the remaining six, in which the bile was completely diverted, all died in 7, 13, 17, 25, 64 and 80 days, respectively, after the operation, with all the symptoms of profoundly disturbed nutrition—inanition, loss of flesh and muscular power, unsteadiness of gait, falling of hair.

Subsequent experiment upon 30 dogs by the same observer, corroborated his former results. All died; though one lived four months, and one a year—the symptoms gradually increasing in gravity until death ensued.

Precisely similar in all essential particulars were the results obtained by Bidder and Schmidt from similar experiments. The several subjects of their observation, as well as Claude Bernard's, lost weight steadily, though appetite was unimpaired, and even increased in voracity; the skin became loose; muscles were scarcely perceptible; hair fell out. They all noted the exceedingly disgusting odor of the fæces and breath, and abundance of flatus in the intestine.

Prof. A. Flint, Jr., also performed, with distinguished success, the operation establishing a biliary fistula upon a dog, completely occluding the common duct and diverting the bile. This dog passed through all the stages above described, dying at length on the 38th day after the operation. The observer noted no fetor of breath in this case; but adds that, though the animal ate ravenously of lean meats, it could not be induced to touch fats, even after fasting a considerable time. In all these cases the occlusion of the ductus communis was demonstrated by post-mortem dissection.

Nasse claims to have kept a dog affected with a biliary fistula alive for five months without appreciable loss of weight; but it died at the end of that time without any apparent cause. The general results, however, obtained by this observer corroborate those given above.

As an offset to these numerous cases, we have now to consider two individual cases of an apparently contradictory character. One is furnished by Bloudlot, whose dog was allowed at first to lick the bile as it flowed from the fistula, but was afterward prevented by a muzzle. It lived five years in good health, being used meantime for hunting. Post-mortem dissection in presence of several physicians and students showed the duct to be entirely obliterated. It is to be remembered, however, in this case, that except during the first and last three months of the five years, the dog was not under Bloudlot's observation at all; and we are not informed whether it was allowed in the interim to lick the

bile as at first, or even whether the fistula remained open. So that, whatever contradictory weight this might have, must be discounted in the absence of information upon these points.

The other is supplied from the reports of the Edinburgh Committee, under whose observation, as reported, a dog similarly affected was kept five months, with a gain meantime of four kilogm. in weight. It is by no means certain, however, that in both these cases a duct was not improvised under the conservative laws of nature; or that, under the same law, sufficient bile did not find its way into the intestine by osmosis. More remarkable provisions than either of these supposed have occurred in the animal economy. And the former explanation gains credence from an experiment related by Prof. Flint, in which the dog lost the canula from his fistula. The wound soon healed, and some months afterward the dog, apparently in good health, was killed. Upon examination the ductus communis *seemed* to be obliterated in this case also, and was in reality; but a tedious and careful dissection of neighboring tissues was at length rewarded by the discovery of a small, tortuous canal, through which bile found its way into the intestine. Like perseverance in the cases above cited might, and would in all probability, have discovered a similar provision. But discounted though the numerous concurrent cases be by these isolated experiments; yet, in view of all the evidence, there can be no rational doubt that bile performs some important function in the process of digestion. Indeed, this seems to be as well established as any other general physiological fact.

As this brings us to the conclusion of the first division of the subject, let us summarize the points established: (1) Bile is not excreted to any considerable extent, either (a) with the fæces, or (b) with the urine; and even the small portion thus excreted is most probably carried out by accidental entanglement with excretory principles. But there seems to be rather a circulation of bile, in some respects similar to that of blood. (2) By sequence from (1) and by disturbance of nutrition exhibited in its absence, it must enter as an important factor in digestion.

II. What then is that function which it performs? That its function should be complex, and not clearly marked like that of

gastric juice, might, as we have stated above, have been anticipated *a priori* from its very composition—comprising a variety of complex substances more or less loosely united, most of which are readily resolved into their ultimate elements, possessing distinctive reactions. Moreover, we do know that such resolution transpires with more or less facility in various parts of the intestinal canal.

(1) First, then, bile seems to aid in digestion by retarding putrefaction, which is prone to occur when a variety of disintegrated and disintegrating substances are collected together in the presence of heat. This is attested by the unbroken testimony of experimenters to the offensive odor of fæces, when bile is diverted from digestion, and to the presence of flatus in large quantities under similar circumstances—both of which are invariable concomitants of putrefaction within and without the intestine.

It is established by experimentation extra-intestinal. Von Gorup Besauez demonstrated that, when meat is digested with bile the temperature of the body, the putrefaction process is postponed for a considerable period beyond that at which it is set up under the same circucumstances without bile.

A similar postponement of fermentation occurs in syrup and urine, according to the same observer. Moreover, Claude Bernard found that fermentation in yeast taken from a dog's stomach was completely arrested in presence of bile.

Stolukoff gives the following comprehensive and intelligent variations of these experiments. Bile and water; fibrin, bile, water; fibrin, fat, water; fibrin, fat bile, water; were grouped as above in separate bottles, and allowed to remain undisturbed from the middle of June to the middle of August. The gas, collected from each over mercury, was, at the end of the time, found to be greatest in quantity from the jar containing fat and fibrin without bile. Though the water and bile had split up into new products, there was no gas given off from the jar containing them alone. The gas collected showed about 92 per cent. CO_2; while the bile acids had split up into glycocol, taurin and cholalic acid.

Bidder and Schmidt also kept meat and albumen 48 hours in so... ion of bile acids at the temperature of the body, without at

the end of that time any putrefactive changes being apparent; whereas the same substances treated simply with water gave distinct signs of such changes in 24 hours. But it is not necessary to further multiply testimony on this point.

(2) Bile or some of the products of its decomposition acts as a persuader of peristalsis in the bowel. This property seems to be enjoyed by its pigments and its acids; but in an especial degree by cholalic acid—as shown on the one hand by Shülein, who found purging and vomiting follow the administration of bile acids; and on the other by the statements of Tiedman and Gruelin, and Eberle, to the effect that all dogs with biliary fistulæ under their observation severally were costive, and the fæces very hard and white. Bile seems, therefore to be a natural inviter of peristaltic action and intestinal secretion.

(3) Bile emulsifies fats to a certain extent, and facilities their absorption. This seems to be the most generally conceded of all its properties; and has been attributed to it since the earliest times. The former is easily demonstrated in a test-tube; the latter by the fact, first demonstrated by Von Wittinghausen, that fats find their way through animal membranes or plaster wetted with bile and at the temperature of the body, much more readily than when dry or moistened with water—indeed there is no evidence that fats are ever absorbed in any marked degree, save through the action of bile upon the membranes of the walls of the intestines. How this is effected does not appear. Most probably the fats are subjected to finer subdivision or else the stomata of the membrane are modified thereby—or possibly both these occur.

The absence of fat through failure of these modifications would account for the clear, colorless character of chyle observed by Brodie, Bidder and Schmidt, Magendie, and Tiedman and Gmelin, in dogs with biliary fistulæ or tied ducts. According to these last two, chyle of dogs in normal condition was white and milky, while the liquid found in both lacteals and thoracic ducts of those with tied ducts was clear and translucent, the difference being due to lack of finely divided particles of fat in the latter.

However it may effect its purpose, one fact is incontrovertible,

namely, that the presence of good healthy bile is a *sine qua non* to the elaboration of fats in the animal economy.

(4.) Fresh human bile, in common with that of many mammals, in a limited extent converts starch and hepatic glycogen into sugar. (Bufalini and Whittish.)

It possesses no power over the sugars themselves. (Frerichs and Shiel.)

Whether this is an original and invariable property, it is impossible to say; but it is difficult to see how so limited an action could be necessary to vitality. If, however, sugar in certain proportion be a necessity to the healthy performance of vital functions, it is conceivable that, in certain conditions where the direct sources of sugar supply are cut off, this power of bile over hepatic glycogen might rise to considerable prominence.

These in the aggregate constitute the function of bile in digestion, so far as can be predicated with any certainty in the premises. Are they sufficient to account for the presence of bile in the intestine? We can only say in reply, that the absence of bile from the intestine is invariably attended by an almost total suspension of these actions—several or all of them—and the suspension of these actions for any considerable period produces death. For our part, we cannot see why elaboration of fats, repression of putrefaction, and promotion of peristalsis, should not collectively constitute a satisfactory account of its presence—certainly they are essential to existence.—*New Orleans Medical and Surgical Journal.*

A CLINICAL STUDY OF THE SMALL GRANULAR CELLS OF THE BLOOD. By JAMES T. R. DAVISON, M. D. Edinburgh. Late Resident Physician to the Royal Infirmary, Edinburgh; House Surgeon to the Royal Southern Hospital, Liverpool.

Blood contains, in addition to the red and white corpuscles, a number of granular colorless cells, which present varied forms and sizes, and are generally very much smaller than the red corpuscles when examined in the ordinary way. They have a great

tendency to adhere to the cover-glass or slide; they occur singly or in groups. Some time after the blood has been drawn from the finger these cells become clearer; if present in groups the individuality of the cells is lost, and the group becomes a single granular mass. In either case fibrin or fibrin-like processes protrude from their surface. These cells have been known for some time to Professor Norris, who has traced them in their development, and states them to be undeveloped red corpuscles. Bizzozero has lately studied them in the living capillary. In healthy blood they are present in extremely small numbers, but are very abundant in certain pathological states. I have examined these cells in 150 specimens of pathological blood, noting in each case the temperature of the patient from whom the blood was drawn, whether anæmic or not (in the last 100 cases, if anæmic, I noted roughly, the degree anæmia present), and lastly the nature and duration of the disease.

My observations lead me to believe that the small granular cells of the blood are present in excess under two conditions—first, as the result of their excessive formation brought about by certain states of the system demanding it; and secondly, as the result of diminished power in the process of charging them with hæmoglobin, whereby many of them remain in their undeveloped state, and do not become fully formed red cells.

In the inflammatory exudation produced by a blister, Dr. Burdon-Sanderson years ago found granular corpuscles which degenerated into fibrin. These corpuscles must be the cells under consideration at present, for these cells are constantly seen to change into fibrin, while leucocytes never undergo this change. Here, then, we have the important fact that in inflammatory serous exudation, such we have in pleurisy, rheumatic fever, etc., the small granular corpuscles of the blood migrate from the blood-vessels. Dr. Burdon-Sanderson in his first Lumleian lecture this year described ordinary inflammation of the mesentery, and after referring to the migration of leucocytes he states that the surface of the mesentery becomes covered by a coagulable fluid. This coagulum, when examined under the microscope, is seen to consist of fibrin which Dr. Burdon-Sanderson ascribes to the degeneration of leucocytes. Now, if a drop of blood be examined under

the microscope the leucocytes are seen to remain intact for a long time, and never undergo the same changes as the small granular cells—that is, they never degenerate into fibrin. Moreover, Professor Norris has found that the fibrin of coagulation is due to changes in the undeveloped red cells. We must come to the conclusion, then, that the coagulable fluid on the surface of the mesentery was full of undeveloped red cells, which had degenerated into fibrin—that is, that in ordinary inflammation, in addition to the migration of leucocytes, there is a migration of the small granular corpuscles. We have good grounds, then, for believing that not only in serous inflammatory exudation, but also in purulent exudation, there is a migration of the undeveloped red corpuscles. If then, in local inflammation the blood is drained of its small granular corpuscles, nature must in some reflex manner stimulate the formative organs of these cells to increased action, in order to meet the demand made upon the blood. Hence in local inflammations we would expect to find an increase of these cells in the blood. I will not refer in these notes to the part played by leucocytes in the blood under these conditions. Such an increase we find in inflammation. In acute abscesses the blood is loaded with undeveloped red cells. In a case of acute periostitis with a large amount of pus these cells were found abundant in the blood. In rheumatic fever and subacute rheumatism they are again present in abundance. In these last conditions we have serous inflammation in the joints, making a great demand upon the blood. During the fever of pneumonia I did not find the increase so marked as in rheumatic fever. Possibly the inflammatory exudation thrown out in pneumonia does not contain many small granular cells. That high temperature *per se* is not the cause of the increase of these cells was proved in a case of typhoid fever, where, after a fortnight of high temperature, there was scarcely any increase of these cells; also in another case of typhoid, with a temperature of 103.4°, and of five weeks' duration, the increase was very small. In typhoid there is no drain from the blood, at least no loss of the solid element of the blood, and therefore no demand is made for an increase in the production of these elements. In great loss of blood from hæmorrhage there is a great loss of the

red corpuscles, and on the same principle we would expect after a time to find an increase of the undeveloped red cells, in order that they should replace the lost red cells. If after excessive hæmorrhage we examine the blood, we actually find a great increase in the number of the small granular cells. Another source of drain of the solid elements from the blood is found in chronic discharges of pus. In cases of spinal caries with discharge of pus, in cases of necrosis, in those where any large wound is constantly secreting pus—in fact, in all cases where there is chronic pus formation, the blood is full of undeveloped red cells. I shall show further on that a drain of the liquid element of the blood, however great, does not affect the number of these cells in the blood.

I will next consider the increase of the small granular cells, in relation to anæmia. There appear to be two factors in the production of the anæmic state, both of which may be present together, but not necessarily. One factor is a lowering of the power by means of which the small granular corpuscles are charged with hæmoglobin, and changed therefore into fully developed red cells; the other is a lowering of the formative power, which creates the small granular corpuscles, and therefore which creates the fully formed red cells. In the one case the red cells, developed and undeveloped, are present in normal quantity, but the latter are in relative excess. Such a condition would obtain in chlorotic anæmia, where there is no loss of substance in the body, and therefore we would infer no loss of substance in the cellular element of the blood, but where an impaired vitality retards the full development of the red cells. Such a condition would obtain, also, in the convalescence from acute diseases. I have found, as a matter of fact, abundance of small granular corpuscles in the blood of chlorotic patients, and in that of those convalescing from rheumatic fever and pneumonia.

In the second kind of anæmia the predominant factor is the lowering of the formative energy. As a typical example we have the anæmia present in the malignant dyscrasia. Here there is a general loss of substance, not from any high temperature, as this may be altogether absent, but apparently from a general impairment of formative power. If thus the cells of the different

organs suffer in their numerical formation, we may naturally suppose that the red cells of the blood are also placed in the same condition. This appears to me the only explanation which can account for the small increase of the undeveloped red cells which I have observed in cases of great anæmia and emaciation due to malignant growths. It appears to me that the red cells are diminished in number, so that the energy which charges the undeveloped ones with hæmoglobin has a smaller area over which to exert its strength, and thus although this energy too must necessarily be greatly impaired, and as a consequence some of the small granular cells must remain undeveloped, still the impaired energy has less work to do, there being fewer small granular cells to develop, and hence it is that in such conditions we find in the blood but a small increase in the number of the small granular cells. I believe that the same explanation must account for the small increase of the cells which I observed in a case of chronic dysentery with great anæmia and emaciation. The constant albuminoid discharge from the intestines appears to exert the same influence on the formative energy as in the case of the malignant dyscrasia. Lastly, the small increase observed in the cases of chronic Bright's disease must be explained in the same way. In the cases of chronic Bright's diesease and dysentery the blood is drained of its liquid element, and the increase of the undeveloped red cells is small; in those cases where the drain consisted of solid elements the increase was marked. It must be borne in mind that the two conditions under which an increase of the small granular cells is present may exist together in the same case. For example, in phthisis, where these conditions are typically present, these cells are very abundant. In phthisis we have cavities secreting pus, hence there is a reflex call for an increase in the formation of the granular cells. But in phthisis there is also a general impairment of vitality, therefore the power to charge these cells with hæmoglobin is weakened, and hence the very large number of undeveloped red cells seen in the blood of phthisical patients. Again, in cancer the disease of these cells, as explained above, is small, but let the cancer bleed or let it constantly discharge, and matters will be different. We now have a drain of the solid elements of the blood, with the accompanying

increased reflex formation, and so we find, in bleeding cancers or in those from which there is a discharge, an abundance of small granular corpuscles in the blood.

In conclusion, I have purposely avoided in this paper any reference to the behavior of leucocytes in the blood under the conditions in which the other cells have been considered. The increase of leucocytes in the blood under certain conditions is important, and the relation of their increase to that of the small granular cells in the same blood may one day prove to be of great diagnostic value. There is some ground for believing that, in certain classes of inflammations, the leucocytes are increased in greater relative proportion to the small granular cell, and *vice versa*. By a knowledge of the conditions under which either increase takes place, we may, perhaps, be able, by an examination of the blood, to determine whether an ordinary pleurisy has become an empyema, and to arrive at other diagnosis. A clinical study of the blood in all cases is, therefore, of the highest importance.—*London Lancet*.

SYPHILIS—ITS RELATION TO SCROFULA.—DR. JOHN B. ROBERTS (*Medical Times*, March 25, 1882,) presents the following views:

I. Syphilis and scrofula undoubtedly show a tendency to affect similar structures, as is proved by the many diseases formerly classified as scrofulous now known and admitted to be inherited syphilis. In fact, those who hold that the two affections are distinct are obliged sometimes to admit that it is sometimes impossible to determine from symptoms, or even from the antecedent history obtainable, which disease is responsible for the lesions exhibited.

II. Scrofula has been, and is, most common at times of life, in historic periods, and in countries in which syphilis is known to have been and to be prevalent and virulent. Again, scrofulous diseases are less prominent and more benign at the present day than formerly, when acquired syphilis was more destructive, because less judiciously treated.

III. It is so well known that syphilitic parents have, as a rule, syphilitic children that an exception gives rise to scientific comment. Scrofula is usually an inherited condition, and could readily, therefore, be due to such a widespread and prolific parentage as syphilis.

IV. Scrofulous affections are found in the highest stations of life—a fact which would be well nigh inexplicable if scrofula were the result of exposure, insufficient food, filth and bad air. If it be a grandchild of syphilis, however, its presence in every household can be as general as the immorality that gives birth to ts ancestor.

V. Cases occur similar to that reported by Lugol, who refers to a family of two healthy children, the father of whom subsequently contracted syphilis and inoculated his wife. His third child was born, who, after exhibiting many scrofulous symptoms, died at eighteen years, though the elder brother and sister presented no such conditions of ill health.

VI. Acquired syphilis has been accused of awakening scrofulous manifestations in those predisposed to scrofula in whom no symptoms have occurred for years. This suggests a relationship between the affections which is very intelligible if scrofula be viewed as a remotely inherited syphilis.

VII. Scrofula is the condition furnishing deposits of tubercle, which are the result of infection arising especially from cheesy accumulations. Syphilis is an incessant instigator of inflammations and of gummy tumors which frequently undergo caseous degeneration. Hence pathology points at syphilis as an agent well calculated to give birth to the scrofulous diathesis.

VIII. The most effectual remedies in the treatment of syphilis, whether acquired or inherited, are mercurials and preparations containing iodine. These so-called specifics in the management of syphilis are agents of greatest benefit in alleviating scrofulous manifestations.

The arguments of those denying the syphilitic parentage of scrofula may be summarized as follows:

I. Scrofula is not inoculable, as are the primary, the secondary, and sometimes the inherited lesions of syphilis.

II. The successive steps between primary syphilis in the pro-

genitor and scrofulous diseases in the posterity have not been traced by any scientific investigators, who quote only isolated cases of apparent relationship.

III. Scrofulous affections are found in patients who have presented no such manifestations in early life (when inherited syphilis is especially noticeable), who have had neither scrofulous nor syphilitic parentage, and who had never acquired primary syphilis. Moreover, phthisis, which is a lesion of scrofula, is found very frequently in animals not known to have syphilis.

IV. Scrofula is not considered a factor in the causation of syphilis, as might be expected if there was a mutual relationship between them.

V. Scrofula is believed by some to have existed in Europe before the advent of syphilis, and according to certain writers is prevalent in countries where syphilis is rare.

VI. Syphilis yields more quickly and readily than scrofula, though the same or similar remedies may be available in both diseases.

Such are the arguments of the advocates and of the opponents of the syphilitic origin of scrofula. The affirmative side seems to me to present more points than are generalizations, and, at the same time, to offer greater difficulties for its opponent to meet. The negative arguments are weakened by the facts—1, that most animal poisons become weakened when passed through several subjects, and that is evidence pointing to the possibility of scrofulous disease being transferred from one person to another; 2, that the links of the chain must be imperfect when the period of hereditation and differentiation requires probably several generations; 3, that it is admitted even by the affirmative side that scrofula may arise from ordinary inflammations, and hence may occur in animals as well as in a non-syphilized man; 4, that many causes in nature cannot assume the rôle of effects; 5, that statistical evidence is proverbially subject to errors; and, 6, that the relative time of therapeutic influences depends more on the tissue-changes produced than on the etiological agency.

A survey of the field has led me to the conclusion that vast numbers of cases of so-called scrofulous disease are the direct result of inherited syphilis, but that, until pathology ascribes the

tuberculous diathesis to a *special* and not a mere inflammatory infection, it is illogical to deny that acquired, and therefore also hereditary, scrofula may, and at times does, arise from absolutely non syphilitic precedents.—*Detroit Lancet.*

TENOSYNOVITIS; ITS CAUSES, NATURE, SYMPTOMS AND TREATMENT: BASED UPON AN ANALYSIS OF FIFTEEN CASES. By WILLIAM BARTON HOPKINS, M.D., etc. [Read June 7, 1882.]

TENOSYNOVITIS may be defined as an affection usually occuring in the forearm, and characterized by a peculiar creaking of the tendons as they move in their sheaths, depending upon a particular kind of strain to which the muscles belonging to these tendons have been subjected.

Cause.—The predisposing cause of the affection is the occupation of the individual, and in studying, therefore, fifteen cases, occurring in subjects of otherwise average health, the nature of their employment is worthy of special attention. In three of the fifteen, the disease occurred in men employed in a dye-house, whose work consisted in wringing the goods, which had been soaked in dye; in two, the patients were weavers, who throw the shuttle from side to side with the index finger of the right hand; one case occurred in a baker, from kneading bread; one in a boiler riveter, from hammering; one in a car driver, from using the brake; one in an iron moulder, from continued use of the shovel; one in a plaster worker, from stirring plaster with a hoe; one in a washerwoman, from using a clothes wringer; one in a laborer, who continued to work after receiving a severe contusion of the forearm from the fall of a heavy iron pipe; and one each in a rope twister, a marble rubber, and a painter.

In contrasting the above-named occupations with many others, requiring far more muscular effort, and giving employment to many more workmen than these, the idea suggests itself, that it is not the mere amount of strain to which the muscles and their tendons are put, that predisposes to the disease, but rather the kind of effort, which is of a tedious, continuous, monotonous sort. On the other hand, trades which would appear likely to furnish subjects for the disease more frequently than those which have been already spoken of, fail to do so. This, in some instances, can be

explained. Gold beating, for example, where an eight-pound hammer is used almost uninterruptedly for five hours, and is carried from above the shoulder down to the level of the waist, would seem to contradict this view, as the disease is unknown to one of the largest gold leaf manufacturers; a careful study of the movements of the operatives in performing this work, however, shows that the strain is not upon the muscles of the forearm, but rather upon those of the shoulder and arm; as the hammer descends simply by gravity and returns by recoil from the elastic block, composed of alternate sheets of gold and animal membrane, to a point where the biceps and deltoid muscles complete the elevation.

The exciting cause of the attack is usually the resumption of work to which the individual is thoroughly accustomed, after a shorter or longer interval, when he is out of practice, and when the parts involved in executing special movements have become less actively nourished; though in the case of the washerwoman, the clothes wringer was used for the first time, and the rope twister was doing work that was new to him. In the laborer the attack was of traumatic origin.

Pathology.—The means of determining the exact lesion in this disease are necessarily to a certain extent conjectural, but as the pain and crepitation are coincident in their onset and subsidence, as there is no impairment of motion after recovery has occurred, and, as the parts under treatment regain their normal condition in a very short time, it seems highly probable that there is no true inflammatory process at all, certainly none extending beyond the stage of congestion, and that the creaking which exists is due to insufficient lubrication, with consequent drynesss, not, as has been supposed, to exudation of lymph. Under rest and counter-irritation the congestion very soon disappears, the synovial surfaces pour out their proper fluid, and the tendons once more move smoothly and noislessly in their sheaths.

Symptoms.—Soreness, amounting to positive pain upon motion or pressure along the course of the affected tendons, inability to use the part, and the presence of the peculiar creaking, which is communicated to the finger on palpation, are the symptoms which denote the existence of tenosynovitis.

Diagnosis.—From its common seat upon the dorsum of the forearm, this affection may be mistaken for fracture of the radius. The history of the case, however, showing that there has been no blow or fall, as a rule; the quality of the crepitus, which is much softer and finer than that of fracture, and like that of cellular emphysema after fracture of the ribs, or that produced by rubbing two pieces of cloth between the fingers, and the way in which the crepitation may be elicited,—all leave little chance of error. The disease will not be mistaken for a strain of the muscle, if a careful physical examination is made.

Treatment.—From what has been already said, it will be seen that the disease is at once acute, painful, and disabling. It, however, yields, as a rule, readily to treatment; for the patient can seldom work more than a day after he is attacked, and finding that he exhausts the usual home embrocations, without relief, promptly seeks aid elswhere; this enables the surgeon to institute treatment before an advanced stage is reached and permament mischief done by a disposition of plastic matter. Absolute rest of all the parts concerned is the most important element in the treatment; a palmar splint, therefore, from the elbow to the tips of the fingers is applied, when the forearm is the part affected. Counter-irritation is next indicated, and may be employed in one of two ways. If the skin is red, a band one inch broad of tincture of iodine should be painted in an oval form around the area over which creaking is felt; while a lotion of lead water and laudanum is applied within this band. In cases where there is but slight creaking, and no redness of the skin, tincture of iodine may be painted directly over the diseased part, without the employment of any lotion. The dressing is re-applied each day, until all pain, tenderness, and creaking have disappeared, which generally occurs at the end of four or five days. After this a roller bandage alone is continued, until the parts have regained their tone.—*Phil. Medical Times.*

Threatened or Actual Epidemics.

The following circulars contain information concerning the relations of the Marine Hospital Service to the prevalence of conta-

gious and epidemic diseases that should be known to the whole profession :

WASHINGTON, D. C., August 9, 1882.

To Medical Officers of the Marine Hospital Service and Officers of State and Municipal Boards of Health :

I am directed by the Secretary of the Treasury to inform you that Congress, at its last session, enacted that :—

" The President of the United States is hereby authorized, in case of a threatened or actual epidemic, to use a sum not exceeding one hundred thousand dollars, out of any money in the treasury not otherwise appropriated, in aid of State and local boards, or otherwise in his discretion, in preventing and suppressing the spread of the same."

He further directs me to inform you that the President has decided to employ this contingent appropriation through the agency of the Treasury Department, and that, in case of a threatened or actual epidemic, immediate action will be taken, upon application from the Governor of a State addressed to the Secretary of the Treasury.

JOHN B. HAMILTON,
Supervising Surgeon-Gen'l U. S. Marine Hospital Service.

WASHINGTON, D. C., August 11, 1882.

To Medical Officers of the Marine Hospital Service :

The attention of all officers is called to the following paragraphs of the regulations governing this service, approved by the Secretary of the Treasury November 10, 1879 :

" *Paragraph* 61.

" Medical officers and acting assistant surgeons of the Marine Hospital Service will inform themselves fully as to the local health laws, and the regulations based thereon and in force at their respective ports and stations, and will comply strictly therewith."

" *Paragraph* 62.

" Medical officers and acting assistant surgeons are, under the direction of the Surpervising Surgeon-General, required to observe and to aid in executing the quarantines and other restraints established by the health laws of any State, and to report forthwith to the said Surgeon-General any important event or fact that may come to their knowledge bearing upon the importation, outbreak, or spread of cholera, yellow fever, small-pox, typhus, or other epidemic disease, at or near their respective stations."

A strict compliance with these paragraphs is enjoined.

JOHN B. HAMILTON,
Surgeon-General U. S. Marine Hospital Service.

APPROVED : H. F. FRENCH, *Acting Sec'y of the Treasury.*

CLINICS.

MONDAY.

Eye and Ear Infirmary—1.15 p. m., Otological, by Prof. Jones; 2.15 p. m., Ophthalmological, by Prof. Hotz.
Mercy Hospital—2 p. m., Medical, Profs. Hollister and Quine.
Rush Medical College—3 p. m., Dermatological and Venereal, by Prof. Hyde.
Woman's Medical College—2 p. m., Dermatological and Venereal, by Prof. Maynard.

TUESDAY.

Cook Co. Hospital—2 to 4 p. m., Medical and Surgical Clinics.
Mercy Hospital—2 p. m., Surgical Clinic, by Prof. Andrews.
Woman's Medical College—10 a. m., Prof. Ingals.

WEDNESDAY.

Chicago Medical College—2 p. m., Eye and Ear, by Prof. Jones.
Rush Medical College—2 p. m., Medical, by Prof. Bridge; 3 p. m., Ophthalmological and Otological, by Prof. Holmes; 3:30 to 4:30 p. m., Diseases of the Chest, by Dr. E. Fletcher Ingals.
Woman's Medical College—2 p. m., Eye and Ear, by Dr. W. T. Montgomery; 3 p. m., Diseases of Children, by Prof. Chas. W. Earle.
Eye and Ear Infirmary—2.30 p. m., Dr. E. J. Gardiner.

THURSDAY.

Chicago Medical College—2 p.m., Gynæcological, Prof. Dudley.
Rush Medical College—2 p. m., Diseases of Children, by Prof. Knox; 3 p. m., Diseases of the Nervous System, by Prof. Lyman.
Eye and Ear Infirmary—2 p. m., Ophthalmological, by Dr. Hotz.
Woman's Medical College—3 p. m., Surgical, by Prof. Owens.

FRIDAY.

Cook County Hospital—2 to 4 p. m., Medical and Surgical Clinics, by Profs. J. H. Hollister and R. N. Isham.
Mercy Hospital—2 p. m., Medical, by Prof. Davis.

SATURDAY.

Rush Medical College—2 p. m., Surgical, by Prof. Gunn.
Mercy Hospital—2 p. m., Surgical Clinic, by Prof. Andrews.
Chicago Medical College—3 p. m., Neurological, Prof. Jewell.
Woman's Medical College—2 p. m., Gynæcological, by Prof. Stevenson.
Daily Clinics, from 2 to 4 p. m., at the Central Free Dispensary, and at the South Side Dispensary.